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May 23rd, 1931

Sir Alexander Gibb, C.B.E., C.B.

Dear Sir:

As a Foreword to the attached Memoranda, the Halifax Harbour Commissioners here-with respectfully present certain views on the larger questions involved in respect to the present and future position of the Port of Halifax in its relationship to Canadian National development.

Sometime following the Federal Election of July 28th, 1930, the present Halifax Harbour Commissioners were invited to take over the duties of administering the Port of Halifax under the terms of the Halifax Harbour Commission Act, being Chapter 58 of the Acts of 1927, and on the 24th day of September, 1930, were sworn into and assumed office. The Commissioners in assuming office, did so under the scheme and method of organization and administration as laid down for this Port under its Act and up to this time, have operated under these conditions.



As the heaviest volume of traffic through the Port of Halifax is during the period of the close of navigation in the Saint Lawrence River, the Commissioners upon taking office had to immediately prepare for the rush season. A reorganization of the staff and various services was also considered to be of immediate urgency and was undertaken. In addition, the Commissioners were immediately faced with the most serious problems in respect to the contract work proceeding in the construction of Pier "B" and Pier 5. Other items of construction were uncompleted and in practically every instance, after preliminary studies, it was felt that alterations in the methods of construction of these works were necessary, and the same were effected.

The Commissioners also found it necessary to immediately provide additional temperature regulated facilities for the handling of a large volume of perishable commodities which were to be passed through the port, the bulk of which were in the nature of new traffic to the Port.

On the 24th day of October, 1930, the Government of Canada appointed the Honourable Mr. Justice Orde to investigate the administration of the late Halifax Harbour Commission, and this investigation was commenced at Halifax on the 19th November, 1930 and the hearing of evidence continued for some weeks.

Because of these factors, it was necessary for the Commissioners and staff to intensively study numerous problems which were found, which study involved a great amount



of research work and gathering of data of various kinds, as well as an endeavour to arrive at conclusions in respect to a large number of the more urgent problems which required immediate settlement. At the same time, the reorganization of the staff was proceeding and several changes and additions were made in respect to the more important positions. This factor in itself presented an additional difficulty, in that new members of staff, of necessity, had to give intensive study to the historical features of the problems involved in order that they might understand and appreciate the present position of such problems. In addition to this, the Commissioners organized a new department of traffic, and within a very brief time this department was operating efficiently and effectively.

The Commission found the operations at the port considerably overmanned, and from the time it assumed office down to the present moment, a continued effort has been made to reorganize the various services in such a manner that a gradual reduction of payroll could be carried out, without adversely affecting the efficiency of the organization. A great deal has been accomplished in this regard, and during the next few months a great deal more can be done along this line, as the normal operation of this port can be carried on with a relatively small staff, providing the employees are trained in their positions, and proper details of organization are effectively instituted. It must, however, be made clear that because of



the very large amount of work required in the gathering and compiling of data, the intensive study of all the engineering problems, the reorganization of the Accounting and other departments, forced upon the Commissioners a situation which demanded the employment of a very much larger staff than would be required under normal circumstances. As this work diminishes, employees in the various departments are being let out and within a reasonable time it can be expected that the number of employees will be down to a normal basis.

Numerous details effecting economics were considered and dealt with by the Commission during this period, such as, a thorough reorganization of the Timekeeping System, the method of payment of labour, the changing over of a large number of employees, such as car drivers, elevator clerks, store clerks, boatmen, etc. from an hourly basis of pay to a salary basis, thus providing considerable savings in money and at the same time, effecting better methods of operation. On the face of it, however, this change would appear to those who are not familiar with its purposes, to be adding to our staff, rather than reducing the same, because every employee who is placed upon the salary basis - appears on the staff list which is on record in the Department at Ottawa, whereas, such names would not so appear if they were retained on an hourly pay basis. However, there can be no question that these changes have effected savings in money and have been productive of more effective operation.



Further, when the present Commissioners took over the administration of the Port, a preliminary survey indicated that Harbour properties, in many cases, were not in a satisfactory condition for operation, and that maintenance had been somewhat deferred. It became immediately necessary to correct this situation, with the result that for a considerable period, the maintenance and operating costs were unduly high.

The major problems that have consumed a large portion of the time of the Commission and staff and which are still unsettled, are those dealing with the Pier "B" and Pier 5 Contracts. As both these matters will, of necessity, be the subject of complete investigation by your Commission, no further reference to them is required here.

The foregoing, in a very brief manner, sets forth the situation as the present Commissioners found it and the steps which have been taken during the last few months towards reorganization and the solving of the more urgent problems.

This memorandum has been prepared for the purpose of placing before your Commission certain information, which we trust will be helpful and at the same time stating our views in respect to a number of the matters which will be considered by you.

It must be understood, however, that during the few months which we have held this office, the time of the Commissioners and staff has been so largely taken up with



the study of urgent and immediate problems that up to this moment we have been unable to adequately consider a number of matters which must be gone into, particularly in respect to the future development of the port. For this reason we are, at the moment, making no recommendation in respect to certain of these details, except in a general way.

Present Port Facilities

The present facilities of the port are dealt with at a later stage in this memorandum. An inspection of these facilities, coupled with such information as to the operation requirements of the port as shall be given, will, in our opinion, indicate that an immediate rounding-out of the present facilities is required. We also submit that for the reasons given hereinafter, the completion of construction works now in progress is essential.

Future Programme of Development  
Over Period of Years

If the Port of Halifax is to maintain a position which will permit it to grow in importance as a National port, facilities must continuously be provided, adequate to the increasing needs of traffic and always with regard to competition of other ports, especially of the well equipped and efficiently operated Atlantic sea ports of the United States. The suggestion that a broad programme of development should be laid down to cover the requirements of the next twenty-five



to fifty year period is, in our opinion, sound. It is, however, apparent that such a future programme must, of necessity, be elastic as the major essential during such a period will be to provide facilities as the same are required and of a nature which is from time to time demanded by general traffic conditions.

An attempt has been made by us to assess future requirements on the basis of the traffic performance through this port during a number of years past, but because of lack of statistical data, it has been difficult to do this on a basis which could be considered to be conclusive. We, of course, know in a general way the history of ship tonnage in and out of the port, and also totals of traffic tonnage. These totals can be compared with the total export and import Canadian traffic via seaboard and with the ship tonnage using the various ports of Canada and a percentage can be struck showing the relative operation of the Port of Halifax in respect to all of Canada.

While we give these figures at a later stage in this memorandum covering a considerable period of years, yet we do so with the knowledge that they are not as complete and helpful as would have been the case if proper records had been kept during the past number of years, but it is clear that such figures indicate a continued expansion of traffic through the port during the period of the next twenty-five years, and taken in conjunction with the faith which Canadians have in the future commercial growth of their country, it must, of



necessity, be anticipated that the normal growth of traffic through the Port of Halifax will at least be in line with the general advancement of Canada. Consideration must also be given to the fact that the Port of Halifax is one of the last of Canadian National ports to come into prominence as a National port, and because of this, the rapidity of growth of this port over the next twenty-five years should be in excess of the average. Another factor for consideration is the natural advantages offered by the Port of Halifax to all shipping during three hundred and sixty-five days of the year, thus giving to Canada an outlet to the Atlantic during the period of the year when the Saint Lawrence River is closed to navigation. It is also most significant to note that during the past few years, there has been a marked increase in the use of the Port of Halifax during the summer months in respect to Canadian traffic originating and terminating in the interior of Canada.

We are not requesting the immediate construction of any additional facilities which cannot be justified on the basis of a well founded expectation of required use over an immediate period. If we are sound in this stand, then it would appear that any programme which is laid down over a long period of years should be sufficiently elastic, so that if presently expected requirements do not mature, then the addition of facilities may be deferred until required. On the other hand, traffic requirements may demand the construction of new facilities at a period in advance of that



stated in a general programme covering a long period of years, in which event, such a demand should not be denied because of the fact that the programme does not call for construction until a later date.

It is also apparent that over the next twenty-five to fifty years traffic conditions may so change as to demand a nature of development or alteration in facilities which cannot, at this stage, be anticipated and a long term programme, of course, cannot in detail provide for this.

The statement that "a port must be developed in advance of its immediate requirements" is undoubtedly sound, and such a consideration must always be given to the establishment of additional facilities. We suggest that as the total period of construction of a large unit such as a modern pier may extend to two or three years, that it may well be necessary to consider such construction four to five years in advance of its estimated requirement.

Based upon considerations herein very briefly set forth with respect to the anticipated future growth of traffic through the Port of Halifax, there can be no question but that this growth will be equally in line with the commercial growth of Canada and from many standpoints, should be in advance thereof. Hereinafter, and on said basis, we give a general opinion as to the extent of development of facilities which will be required to care for the traffic demands made upon this port during the next twenty-five to fifty years.



Form of Administration Most Suitable  
for the Port of Halifax

It is the opinion of the present Commissioners that the recommendation of the Duncan Royal Commission should be followed in respect to the method of administering the Port of Halifax. We quote herewith Sections 15, 16 and 17 of said Recommendation dealing with "Canadian Trade and Canadian Ports", "Statutory Harbour Commissions Recommended for Halifax and St. John" and "Port Development and Maritime Trade":-

"15. Canadian Trade and Canadian Ports

"Very considerable evidence was laid before us "on behalf of the Maritime Provinces, to show that "in the public pronouncements of responsible Ministers "over a long period of time, and indeed in the statutory "obligations under which railway companies operate, "there is to be found the most explicit pledge that "Canadian trade will be developed through Canadian "ports, and yet, in spite of that pledge, ports such "as Halifax and St. John are, it is stated, not being "fully utilized. This is a subject on which, in its "more general aspects, we are not called upon to form "a view, or express an opinion, especially since in "the Terms of Reference made to the Board of Railway "Commissioners under Order in Council dated January 7, 1926, they are specifically required to "inquire into "the causes of Canadian grain and other products being "routed or diverted to other than Canadian ports and "to take such effective action under the Railway Act, 1919, as the Board may deem necessary to ensure, as "far as possible, the routing of Canadian grain and "other products through Canadian ports.

"We do not feel, however, that we would be "exhausting our own Terms of Reference if we did not "take some notice of what we believe to be serious mis- "apprehension in the public mind in the Maritime Prov- "inces as to the proximate cause of the difficulties "in the way of development at Halifax and St. John.



"Over a series of years, the merchanting of  
"the grain crops of the West in the markets of the  
"world has been built up on a delicate mechanism which  
"cannot be suddenly or violently disturbed without creat-  
"ing chaos, and even disaster. The routing has been  
"determined not by reference to railway haul entirely  
"but by the need for concentrating the grain at a key  
"position which commands a range of ports where - be-  
"cause of the quantity and variety of ocean tonnage  
"available - the shipper can be sure of finding cargo  
"space within the shortest possible time for the quan-  
"tity and destination of his shipment, at any given  
"moment.

"In much of the criticism we heard in the course  
"of evidence in the Maritime Provinces, it was assumed  
"that the railway haul was the most important consider-  
"ation in connection with the routing of grain, and it  
"was argued that the Canadian National Railways - for  
"example, so far as Halifax is concerned - was following  
"a policy of neglecting Halifax as a port of shipment.  
"We are satisfied, as a result of our investigation on  
"this point, that such grain as went to Halifax last  
"year was, in fact, the direct result of the efforts  
"of the President and Vice-President of the Canadian  
"National Railways, and that the difficulties that were  
"experienced in connection with the shipment of even  
"that limited quantity (about one million bushels)  
"arose from the inadequate loading accommodation pro-  
"vided for the elevator at Halifax. We were assured  
"by the interests which shipped the grain through that  
"port last winter, that given increased accommodation  
"considerably more grain would be shipped and that, in  
"fact, the only limit to shipments would be what could -  
"by combination of rail and sea facilities - be effec-  
"tively marketed.

"We also received evidence which showed delay  
"and loss arising at St. John through lack of accommo-  
"dation ampler than they have for handling winter traffic  
"generally. We are not overlooking that in respect of  
"both ports there was considerable complaint that grain  
"traffic was not routed to them in summer, but we feel  
"that the availability of cargo space is an element in  
"the routing of grain which has not been given suffici-  
"ent consideration by them in making this complaint."



16. Statutory Harbour Commissions recommended for  
Halifax and St. John

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"We are satisfied that neither at Halifax nor at St. John - although developments at St. John have been more extensive than at Halifax - is it possible, in present circumstances, to secure adequate port development. We recommend that, in respect of each of these two harbours, the Federal Government should establish a statutory Harbour Commission, whose business it would be to see that the port facilities are developed on such a scale as will gradually - but by no means slowly - create channels through which trade can expand both winter and summer. The development of a port is as much a matter of mechanical and technical equipment, business organization and practical administration, as is the development of any extensive manufacturing or industrial business.

"We believe it is in the public interest of Canada, and in the interest of the future growth and expansion of its activities, that its Atlantic ports should be developed, just as it has been that its railways and canals should be developed - though development of these has naturally come first. We believe also from the evidence we have had that, under existing conditions of proprietorship at these ports, there will neither be inducement enough, nor impetus enough, to create really great ports, since for some time, at all events, it will be necessary to create facilities even ahead of expansion of trade. All that the Fathers of Confederation said about the importance to Canada of outlets and inlets on the Atlantic ocean open all the year round is as true to-day as it was then (and is indeed, from a commercial point of view, more immediately true now than then), and, in respect to ports - as well as in respect to the railways - the experience of the late war is fresh enough in mind to illustrate one phase of the national viewpoint and national necessity."

17. Port Development and Maritime Trade.

"We think the beneficial reaction arising to the trading and commercial interests of the Maritime Provinces by reason of grain and other products passing through their ports has been much exaggerated, although grain exports may be of considerable value as basis cargo when other freight is also available. In the character of modern shipping, there would be very infinite limitations to port development based only on traffic that was, as it were, merely piloted through a given channel.

"Port development must be built upon the basis of a balanced and diversified traffic, and on the basis also of diversified markets. It is, therefore, neces-



"sary to avoid easy optimism in this matter of  
"port development. On the other hand, one must  
"not minimize the contribution which technical or-  
"ganization and efficient port administration could  
"make to the revival of agricultural industrial and  
"commercial enterprise within all three Maritime  
"Provinces themselves, nor must one minimize, either,  
"the contribution which such revival of Maritime  
"province activity could in turn make to the succes-  
"sful development of these ports. In this respect,  
"it seems to us that the declared ocean policy of  
"the Dominion can, with proper organization, be co-  
"ordinated with Maritime Province trade, so as to  
"render a service to those interests in the Maritime  
"Provinces which, by their nature, cannot enjoy much  
"advantage from certain other aspects of Dominion  
"Trade policy.

"We doubt whether it is sufficiently realized  
"to what extent, in an unforeseen by inexorable way,  
"enterprise within the three Maritime Provinces has  
"been checked as a result of their maritime develop-  
"ment not having kept abreast of the transformation  
"which in the last half century has been taking place  
"in sea transportation, not only as regards the char-  
"acter, size, and speed of shipping tonnage but also  
"as regards the port requirements for handling it.  
"Both in the nature of the basic products of the  
"Maritime Provinces, and in the advantage which their  
"maritime location gave them, access to world markets  
"was in former times their greatest asset. In owner-  
"ship of tonnage, and in the service that tonnage  
"rendered to them in transportation of commodities  
"around their own regions, as well as for their over-  
"seas markets and return trade, they had a most  
"valuable source of income, a source of income too  
"which helped materially to maintain the balance of  
"trade. Access to world markets is still, in many  
"respects, more important to them for some of their  
"natural products - though not for all - than access  
"to internal Canadian markets. Events outside their  
"control may have closed to them some overseas markets  
"which were at one time available or may have made  
"these markets less profitable, but initiative and  
"enterprise can supplement old markets with new so  
"long as sea communication is maintained abreast of  
"the times in equipment, facilities and organization.  
"From the formal evidence we heard, and as much from  
"the informal evidence we obtained in pursuing our  
"investigations in the smaller centres and in country  
"districts, we formed the opinion that a considerable  
"impetus could be given to agricultural and other pur-  
"suits in these provinces by greater trade and commer-  
"cial organization directed upon a maritime policy.



"It is not possible, within a short space  
"of time, to make good the leeway which delayed  
"attention has created. But we must not, on the  
"other hand, underestimate the rapidity with which  
"development of traffic can be expedited through  
"the development of facilities for handling the  
"traffic (including requisite cold storage), and  
"through making known, by all the sources that are  
"open to the energetic administration of harbour  
"commissions, in the shipping exchanges of the world  
"and to shippers, the facilities that are offered  
"at any given port. It would be a function of the  
"harbour commission to survey and study the possi-  
"bility of developing the export trade of the Mari-  
"time Provinces. In the recommendation we make as  
"to a public commission, we do not have in mind Mari-  
"time province trade standing by itself. We have  
"also in mind the development of that trade as a  
"factor in the development of the port, co-ordinated  
"with the very substantial nucleus of shipping traf-  
"fic that already attaches to the Ports of Halifax  
"and St. John, and co-ordinated also with the other  
"factors which the commission's organization would  
"influence and direct. These include the wider ex-  
"port (including grain shipments) and import traffic  
"that can be organized all the year round if the  
"full advantage is to accrue to Canada from such ar-  
"rangements as lie at the foundation of their policy  
"in regard to trade through Canadian ports, railways,  
"trade treaties, British preference provisions, and  
"immigration.

"Mere reiteration of such a general slogan as  
"Canadian trade for Canadian ports may stir sentiments  
(and we are not belittling sentiment, although its  
"business value must not be exaggerated), but it will  
"certainly not develop traffic beyond the point at  
"which there are facilities to deal with the traffic  
"and there is organization to ensure the regulation  
"and flow of the traffic, or beyond the point at  
"which these facilities and that organization both  
"from the point of view of land and sea transit, can  
"place goods in the markets of the world on a compe-  
"titive basis. It is to be remembered, too, that  
"even in Canadian ports - and particularly at Montreal  
"where port development has reached a very high level  
"indeed - considerable tonnage is being handled which  
"is not Canadian, either in origin or in destination.

"We had, at our request, a private session with  
"the Montreal Harbour Commission and, by hearing from  
"them the steps they took to survey and stimulate pro-  
"duction in their immediate territory as well as wider  
"a field, we are confirmed in our view as to what Har-  
"bour Commissions (constituted of business and experienced  
"persons) at Halifax and St. John could do in stimulating  
"the trade of the Maritime Provinces.



"We express the hope that the recommendation we make with regard to a public commission for each of these two ports will not only be accepted but will be acted upon promptly. Already there has been considerable irritation in the Maritime Provinces at the neglect of the development of trade through their ports, and we feel that that neglect cannot be made good unless port facilities are taken in hand, and unless also the ocean policy of Canada is not so much declared in general terms as organized in detail."

The essence of the two major conclusions as set forth in said recommendations is to the effect that in respect to the necessity of development - that in the public interest of Canada and in the interest of the future growth and expansion of its activities that its Atlantic ports should be developed, just as it has been that its railways and canals should be developed. Also that all that the Fathers of Confederation said about the importance to Canada of outlets and inlets on the Atlantic, open all the year round, is as true today as it was then, and is, from a commercial point of view, more true now than then. And further, that the experience of the late War is fresh enough in mind to illustrate one phase of the National viewpoint and National necessity.

And secondly, that in respect to the method of development - the finding directly and definitely states that it is impossible under present conditions (referring to the year of the investigation, 1926), to secure adequate port development. The finding proceeds to recommend the establishment of a statutory Harbour Commission at Halifax whose business it would be to see that the port facilities are developed on such a scale as will gradually - but by no means slowly -



create channels through which trade can expand both winter and summer.

The recommendation is quite definite that a major function of such a Commission is to make known by all the sources that are open to the energetic administration of Harbour Commissions, in the shipping exchanges of the world and to shippers, the facilities that are offered at its port. And further, to survey and study the possibility of developing the export trade of the Maritime Provinces.

In discussing the various forms of administration that are available to ports, the question of the ability of the personnel may be sufficient in itself to cause one form of administration to be successful, as against another form which would have been equally as successful if it had had the advantage of equally as capable administrators. Bearing this factor in mind, it is our opinion that administrators, whether called Harbour Commissioners or otherwise, appointed from the local community have a much better opportunity of carrying out the expressed thoughts of the Duncan Commission than would otherwise be the case. We are not in favour of a central administration of Canadian ports, to the exclusion of local control. It is our opinion that a central body could not view and provide for the requirements of the Port in as efficient a manner as could the administration of a local Commission.

The present Commissioners have endeavoured during their short period of office, to carry out the two



hereinbefore stated major recommendations of the Duncan Commission.

We have considered the recommendation in respect to the introduction of this port to shipping interests and the securing of an increased volume of traffic through the port to be one of major importance. With this in mind, one of our first acts was to organize a Traffic Department. The development and handling of traffic is highly technical and requires a specially trained man to direct and preside over such a Department. Such men are not easily found in Canada, but the Commission feel that they have been unusually fortunate in securing the services of the present Traffic Manager, who has had a very wide experience in traffic matters, which experience during the last few years has extended, to a large extent, to the problems dealing with Maritime transportation and the relationship of Canadian traffic to Maritime ports. While the results secured to date in attracting new traffic to the port of Halifax have been most satisfactory, results have not been secured in any instance by a reduction of rates or by other methods directed to unduly divert traffic from other Canadian ports to Halifax. As a matter of fact, the major portion of new traffic has been attracted from American Atlantic sea ports.

The two essentials utilized in attracting new traffic have been through personal canvass of shippers and consignees, and what is more important, an attempt to give more efficient service through the Port of Halifax than has



been offered to such shippers and consignees elsewhere.

A preliminary study of the operating details of the Port of Halifax will indicate that very little increased revenue will result from higher port charges, also that only a small increase in revenue can be expected from the imposition of additional charges upon such items as are not now subject to same. While efficient operation demands that the maximum revenue be secured from traffic, yet there is a grave danger in carrying this to a point beyond which the traffic will bear, particularly in view of the extreme competition of the well equipped, efficiently operated and cheap ports of the American Atlantic seaboard.

On the other hand, if revenues are to increase, it naturally follows that traffic must increase. In other words, we must look for our increased revenues by way of increased traffic. In order to secure the increase of traffic over and above the normal increase, we consider that this port is justified in making every reasonable effort to secure traffic which otherwise is carried for by foreign ports, and also to develop the export and import traffic of the Maritime Provinces via the Port of Halifax wherever the same is economically possible, and at the same time, attract any and all other traffic which can economically use this port. We wish to make clear that in so doing, it is our opinion that this port, or any other Canadian port, should not attempt to attract traffic one from the other on a basis of cut rates or other such discrimination.



On the other hand, one of the most essential features of the Traffic Department is to increase the efficiency of traffic operation at the port. We are pleased to state that in the short time during which our Traffic Department has been operating that marked success has been secured along this line, and we think that steamship operators, railways, shippers and consignees will give ample evidence as to this. This feature, in itself, will go a long way towards rapidly increasing the use of the Port of Halifax.

The Following Considerations are extremely pertinent to both the aforesaid questions of Future Port Development and to the Form or Method of Administration of  
The Port of Halifax.

First, as to the development of the Port of Halifax as a National asset and obligation:- It is necessary that some reference be made to the undertakings given previous to and leading up to the Confederation Pact. We will confine these references to statements dealing directly with the development of Canadian National ports and the direction of Canadian traffic through these ports.

When the political leaders of Upper Canada were endeavouring to secure the consent of the Lower Provinces to a Confederation, these Maritime Provinces were visited by these political leaders of Upper Canada and numerous and definite public statements were made as to the terms and the effect of the Union sought.

On September 12th, 1864, Hon. Geo. E. Cartier, Attorney-General of Lower Canada, spoke at Halifax as follows:-



"I need hardly bring to your notice  
"gentlemen, that we in Canada have those two great  
"elements of nationality - the personal and terri-  
"torial elements; but we knew our shortcomings - that  
"though great in territory and population, we want  
"the other element which is absolutely necessary to  
"make a nation, that is the maritime element. What  
"nation on earth has obtained any amount of greatness  
"unless it has been united with a maritime element?

"I have heard since I have been in Halifax,  
"the objection thrown out that there is much danger  
"that you would be absorbed. It will be very easy  
"for me to dispel such fears. I answer them by a  
"question: Have you any objection to be absorbed  
"by commerce? Halifax through the Intercolonial  
"Railroad will be the recipient of trade which now  
"benefits Portland, Boston and New York. If you are  
"unwilling to do all in your power to bring to a sat-  
"isfactory consummation this great question, you will  
"force us to send all this trade, which you ought to  
"have, through American channels. Will the people of  
"Nova Scotia or New Brunswick be better off because  
"they are not absorbed by commerce or prosperity? It  
"is as evident as the sun shines at noon that when  
"the Intercolonial Railway is built - and it must  
"necessarily be built if Confederation takes place -  
"the consequence will be that between Halifax and  
"Liverpool there will be steamers almost daily leav-  
"ing and arriving at the former - in fact it will  
"be a ferry between Halifax and Liverpool."

On the same occasion, Hon. George Brown  
made a notable address. After traversing the chief arguments  
for Confederation, Mr. Brown made this significant statement:-

"But far in advance of all other advantages  
"would be this, that union of all the provinces  
"would break down all trade barriers between us, and  
"throw open at once to all a combined market of four  
"millions of people. You in the east would send  
"us your fish and your coals and your West India  
"produce, while we would send you in return the  
"flour and the grain and the meats you now buy in  
"Boston and New York."

Hon. John A. Macdonald, Attorney-General  
of Canada West, who was later to place so important a part in  
the inception of the new Dominion as its first premier, was  
equally explicit. On the same occasion as referred to above,



he made, among others, the following statement:-

"I will not continue to detain you at this late period of the evening, but will merely say that we are desirous of a union with the Maritime Provinces on a fair and equitable basis; that we desire no advantage of any kind; that we believe the object in view will be as much in favour as against these Maritime Colonies. We are ready to come at once into most intimate connection with you.

"I don't hesitate to say that with respect to the Intercolonial Railway, it is understood by the people of Canada that it can only be built as a means of political union for the colonies. It cannot be denied that the Railway, as a commercial enterprise, would be of comparatively little commercial advantage to the people of Canada. Whilst we have the St. Lawrence in summer, and the American Ports in time of peace, we have all that is requisite for our purposes.

"We recognize, however, the fact that peace may not always exist, and that we must have some other means of outlet if we do not wish to be cut off from the ocean for some months in the year. We wish to feel greater security - to know that we can have assistance readily in the hour of danger. In the case of a union, this Railway must be a national work, and Canada will cheerfully contribute to the utmost extent in order to make that important link without which no political connection can be complete.

"What will be the consequence to this city, prosperous as it is, from that communication? Montreal is at this moment competing with New York for the trade of the great West. Build the road and Halifax will soon become one of the great emporiums of the world. All the great resources of the West will come over the immense railways of Canada to the bosom of your harbor."

Hon. A. T. Galt, in speaking at Halifax and also advocating the union of these Provinces, states as follows:-

"If we are united we must have an Inter-colonial Railway. I am an advocate of this great work, and it becomes an absolute necessity if a union of these Provinces is to take place at all ..... But the railway is not to be looked upon as a question of cost, but as a bond of union, that will unite us in peace and in time of need."



In the same year, in speaking at Montreal, Hon Geo. E. Cartier states as follows:-

"I must repeat to you what I stated while "in the Lower Provinces, that while we possessed the "personal and the territorial elements which go to "constitute a nation, we were wanting in the maritime "element. During six months of the year we had to "knock at the door of our neighbor in order to carry "on our trade. This cannot be tolerated. This Con- "federation must be carried out. I know that every "citizen of Montreal will understand that at this cri- "tical time we should look to Nova Scotia, to New "Brunswick, and Prince Edward Island for the elements "wanting in Canada to make a great nation. I don't "mean a nation distinct from the mother country.

"With our prosperity we are enriching the "American States, whereas we ought to be enriching "our own States. We ought to be enriching such har- "bours as Saint John and Halifax."

The same year Hon. George Brown, at a large public gathering in Toronto, made a strong plea for the building of the Intercolonial Railway and stated as follows:-

"In agreeing to build the Intercolonial Rail- way, it should also be stated that due regard was had "to the interests of the West. I am happy to be able "to say that with the unanimous consent of the members "of the Conference, we have resolved on the extension "of our canal system. Still further, I think it well "to state that while we have sought Confederation with "Nova Scotia, New Brunswick, Newfoundland, and Prince "Edward Island, we have not been neglectful of the Far "West, but we have made it a condition of Union that "the great North-West may come into the federation on "equitable terms at any time it pleases, and that "British Columbia and Vancouver Island may also be "incorporated with us. We have likewise made it a con- "dition that so soon as the state of the finances will "permit communication is to be opened up from Western "Canada to the North-West Territory."

The Parliamentary debate on the Confederation proposals brought forth equally positive declarations from Canadian leaders. The following is an extract from a speech of Hon. John A. Macdonald:-



"Ourselves already threatened, our trade interrupted, our intercourse, political and commercial, destroyed, if we do not take warning now when we have the opportunity, and while one avenue is threatened to be closed, open another by taking advantage of the present arrangement and the desire of the Lower Provinces to draw closer the alliance between us, we may suffer commercial and political disadvantages it may take long for us to overcome."

During the same Parliamentary debate, Cartier is quoted as follows :-

"Owing to the large trade and commerce of Canada, extensive communication with Great Britain at all seasons was absolutely necessary. Twenty years ago our commerce for the year could be managed by communication with Great Britain in the summer months only. At present, however, this system was insufficient, and for winter communication with the seaboard we were left to the caprice of our American neighbors, through whose territory we must pass. He had also alluded to the bonding system, which if the Americans were to withdraw, Canada would be left in winter without any winter harbors. Canada, having two or three elements of national greatness - territory and population - wanted the maritime element; and as he had said, the Lower Provinces had this element and a seaboard, but not a back country or large population, which Canada possessed; and for the mutual benefit and prosperity of all the provinces, all these elements ought to be united together.... Now was the time to look the matter in the face and adopt the only safe and prudent course open to us in the shape of confederation."

About the same time, Hon. Geo. Brown, in the Debate in the Legislature, stated that :-

"One of the best features of this union is, that if in our commercial relations with the United States we are compelled by them to meet fire with fire it will enable us to stop this improvidence and turn the current of our own trade into our own waters.

"I am in favor of this union because it will give us a seaboard at all seasons of the year ..... The I.C.R. will give us at all times access to the Atlantic through British territory. As a commercial enterprise the I. C.R. has not I apprehend



" any considerable merit; as a work of defence  
" it has, however, many advocates; but if the  
" union of the provinces is to go on, it is an ab-  
" solute necessity; and as the price of union, were  
" there no other arguments in its favor, I heartily  
" go for it. The advantages it will confer on the  
" Maritime Provinces can hardly be over-rated.  
" It will make Halifax and St. John the Atlantic  
" seaports of half a continent - it will insure to  
" Halifax ere long a line of powerful steamers  
" running in six days from her wharves to some near  
" point on the west coast of Ireland and it will  
" bring a constant stream of passengers and immigrants  
" through those Lower Provinces that never otherwise  
" would come near them."

One could go on at length with quotation after quotation entirely along the same lines, indicating beyond any shadow of a doubt the nature of the representations made as the basis of Confederation, but the above are sufficient to indicate the pledges and understandings which were given and accepted as a major part of the outstanding considerations which lead to the Confederation Pact.

It is, therefore, not going too far to say that one of the bases of the National policy of this young country is what is frequently termed as "The East and West Policy" - the building up of East and West Canadian lines of communication - the direction of Canadian traffic through Canadian ports - in other words, the establishment of a self-contained nation, each portion thereof developed along its natural lines and the various portions of this widely extended country made inter-dependent, one upon the other, all enjoying the benefits of a National unity.

As to the continued acceptance by the people of Canada of the so-called "East and West Policy", and the necessity of developing the movement of Canadian traffic



through Canadian channels, and the providing of facilities in order to insure that this be carried out, may we refer to the building of the National Transcontinental Railway, the Federal Election Appeal in 1904, on this question, the result of such Appeal, and the action which was taken by the Government of the day to carry out the construction of this Line, and the Legislation which was enacted in order to insure that the major factors involved would be safeguarded for the future for the whole of the people of Canada.

The Honourable W. S. Fielding, then Minister of Finance, in a speech delivered in the House of Commons (page 8557, Volume 4, House of Commons Debates, 1903) makes the position quite clear:-

"With this road built, instead of being dependent on the Canadian Pacific Railway only, Saint John will have two strings to its bow. Not a pound of traffic that goes to Saint John now will be taken away, and Saint John will stand its chance of getting a fair share of the new traffic to be created by this road. Halifax, with its peerless harbor, will have advantages which it has not hitherto enjoyed. Surely, sir, the time has come after years of deception, humbugging and trickery about the lines to the Maritime Provinces, that faith should be kept with these people, and they should have a through line running on Canadian territory from ocean to ocean."

Chapter 71 of the Acts of 1903, authorizing aid to this road and incorporating the agreement made with the Grand Trunk Pacific Railway Company, clearly indicates that this was one of the main objects of the road, for the aid given was on the express condition that the Company would, by every means in its power, develop Canadian trade through Canadian ports. The Act ratified and confirmed the agreement



made between the Government and the railway company. The agreement recites that the object is -

"To secure the most direct and economical inter-chance of traffic between eastern Canada and the Provinces west of the great Lakes, to open up and develop the northern zone of the Dominion, to promote the internal and foreign trade of Canada and to develop commerce through Canadian ports."

Paragraphs 42, 43 and 45 of the agreement further emphasize the obligations of the Company in this regard:-

"Sec.42. - It is hereby declared and agreed between the parties to this agreement that the aid herein provided for by the Government of Canada is granted for the express purpose of encouraging the development of Canadian trade and the transportation of goods through Canadian channels. The company accepts the aid on these conditions, and agrees that all freight originating on the lines of the railway or its branches, not specifically routed otherwise by the shipper, shall, when destined for points in Canada, be carried entirely on Canadian territory or between Canadian inland ports, and that the through rate on export traffic from the point of origin to the point of destination shall at no times be greater via Canadian ports than via United States ports, and that all such traffic, not specifically routed otherwise by the shipper, shall be carried to Canadian ocean ports."

"Sec.43. - The Company further agrees that it shall not, in any matter within its power, directly or indirectly advise or encourage the transportation of such freight by routes other than those above provided, but shall, in all respects, in good faith, use its utmost endeavours to fulfil the conditions upon which public aid is granted, namely, the development trade through Canadian channels and Canadian ocean ports."

"Sec.45. - The company shall arrange for and provide either by purchase, charter or otherwise shipping connections upon both the Atlantic and the Pacific Oceans sufficient in tonnage and in number of sailings to take care of and transport all its traffic, both inward and outward, at such ocean ports within Canada upon the said line of railway, or upon the line of the Intercolonial Railway as may be agreed upon from



"time to time, and the company shall not divert  
"or so far as it can lawfully prevent permit to  
"be diverted to ports outside of Canada any traffic  
"which it can lawfully influence or control, upon  
"the ground that there is not a sufficient amount  
"of shipping to transport such traffic from or to  
"such Canadian ocean ports."

The Canadian electorate emphatically endorsed this proposal.

The Transcontinental Railway was built with the aid of a tremendous sum of money, given by the Government of Canada, and while it has never been adequately used, this cannot be put forward as any argument that the East and West Policy of Canada has been in the slightest degree departed from in principle. It is quite true that in the course of time, Canadian traffic has not been developed through Canadian ports as was intended by the National Transcontinental proposal, but because largely of selfish interests, and factors which were considered to be "good business", a large increasing portion of Canadian traffic has continued to flow through the Ports of the United States, to the detriment of Canadian ports, particularly those on the Atlantic seaboard. This diversion of Canadian traffic, to a large extent, applied to the Canadian grain movement and the future adequate use of the Port of Halifax, is to a large extent, dependent upon the manner in which this particular factor is cared for.

In the year 1911, the Canadian-Ontario Railway sought aid from the Government. The assistance asked was \$45,000,000, and it was given on the condition set out in the agreement made between the railway company and the



Government, and it was incorporated in an Act of the Dominion Parliament, section 13 clearly indicates that this contribution was made on the distinct understanding that as a result of the building of this road, Canadian trade would at last pass through Canadian ports, and the same promises were made in an act of 1914, section 6, paragraph (a):

Sec. 13 - Acts of 1911, Chapter 6 - Respecting Aid Towards the Construction of the Canadian Northern Ontario Railway:

"That the aid herein provided for is granted by  
"the Government for the express purpose of en-  
"couraging the transportation of goods through  
"Canadian channels. Before such aid is granted  
"the Governor-in-Council shall require the Canad-  
"ian Northern Railway Company to enter into an  
"agreement undertaking that all freight originat-  
"ing on the line of the Canadian Northern Railway  
"Company or its branches, or on the line of the  
"Canadian Northern Ontario Railway Company or its  
"branches, not specifically routed otherwise by  
"the shipper, shall when destined to points in  
"Canada be carried over the Canadian Northern Rail-  
"way, or the Canadian Northern Ontario Railway  
"or the connections of either of them or over  
"any railway within Canadian territory, and  
"that the through rate on export traffic from  
"the point of origin to the point of destination  
"shall at no time be greater via Canadian ports  
"than via United States ports, and that all such  
"traffic not specifically routed otherwise by  
"the shipper shall be carried to Canadian ocean  
"ports; and that the Canadian Northern Ontario  
"Railway Company shall not in any matter within  
"their powers directly or indirectly advise or  
"encourage the transportation of such freight  
"by routes other than those above provided; but  
"shall in all respects, in good faith, use  
"their utmost endeavours to fulfill the conditions  
"upon which public aid was granted, namely, the  
"development of trade through Canadian channels  
"and Canadian ocean ports."

Chapter 20 of the Acts of 1914 - an Act respecting the Canadian Northern Railway System:

Sec. 6 - "That at all times hereafter all freight origi-  
(a) "nating on the line of the Canadian Northern or  
"on the lines of any of the constituent companies,



"or on any line or lines of the railway nor or  
"hereafter owned, leased or operated by the Canadian  
"Northern or by any of the constituent or subsidiary  
"companies, their successors or assigns, shall when  
"destined to ports in Canada be carried over the  
"lines of the Canadian Northern or of the constituent  
"companies, or over some other Canadian railway or  
"railways (which term shall include the lines opera-  
"ted by the Canadian Pacific Railway Company between  
"Montreal and Saint John) and that the through rate  
"on export traffic from the point of origin to the  
"point of destination shall not be greater via Canad-  
"ian ports than it would be via United States ports:  
"and that all inward and outward ocean traffic shall  
"be carried to Canadian ports, and that the Canadian  
"Northern and the several constituent and subsidiary  
"companies shall not in any manner within its power  
"or control directly or indirectly advise or encour-  
"age other than those above provided, but shall in  
"all respects, in good faith, use their utmost en-  
"deavours to further the development of trade through  
"Canadian ports and Canadian channels."

From the foregoing it will be seen that from the very time of Confederation the Maritime Provinces, and especially Nova Scotia, have been definitely promised the development of their ports by the movement of Canadian traffic through these ports. Not only was this a basis of Confederation, but the principle was amply ratified in the 1904 Election, when almost the sole question before the electorate was the National Transcontinental Railway policy. It is equally evident that these undertakings have not been implemented.

The relationship of revenue to operation and maintenance costs and to capital expenditure as applied to the Port of Halifax is a question which will undoubtedly receive your attention. There can be no difference of opinion that every effort should be put forth to secure as speedily as possible an operating situation whereby the revenue of



this port will be adequate for all its financial requirements. At the present moment, the port enjoys a revenue sufficient to care for its operating and maintenance cost, but has very little surplus to care for debenture interest or for providing a sinking fund for maturing its borrowings. This desired result can only be secured through efficient and economic administration and operation, and by increasing the flow of traffic through the port, which, of course, requires at all times adequate facilities.

Parliamentary discussions, particularly those recited in Hansard of April 19th, 25th and 26th of 1928 indicate that there is some difference of opinion in Canada as to the proper interpretation of the Duncan Commission recommendations in respect to the administration and operation of the Port of Halifax. To secure a better understanding of this debate, it is also necessary to read in the same volumes of Hansard, the debate in respect to a loan bill of the Quebec Harbour Commission. In these debates, the opinion was freely stated that in the development of a National asset, such as a terminal port, if the same were proceeded with directly by the Government of Canada and all expenditures were made under the direct supervision of Governmental Departments and subject to review and control by Parliament, that such expenditures were then direct Governmental expenditures for the development of National assets and, accordingly, the question of interest charge was not involved. As the Port of Halifax had been in such a category up to the time of the constitution of the Halifax Harbour Commissioners,



such National expenditures as had been made in the development of the Halifax Railway Terminals and port facilities were clearly within the scope of Governmental expenditures for the purposes stated, and accordingly, no interest obligations were involved. On the other hand, it was argued that as the Port of Quebec had been under Commission operation for many years, the monies required in developing that Port were provided by way of loan from the Federal Treasury to the Quebec Harbour Commission with interest obligations. The substantiation for this interest obligation in this instance was stated to be the fact that while the Federal Government provided these monies, the Parliament of Canada had no direct supervision as to their expenditure or control.

It, therefore, follows that if the above two bases are sound and continue to be maintained, the price which has been and is to be paid by the Port of Halifax for securing Harbour Commission administration is the payment of interest on all future capital expenditures and the re-payment of such advances used in the development of this Port.

We have no hesitation in stating that, in our opinion, such was never intended by the Duncan Commission. This view of the situation was never discussed, as far as we are aware, before the Duncan Commission. The entire effect of the finding of that Commission in respect to the administration and operation of the Port of Halifax was based upon relief, rather than upon extra obligations.

On the other hand, a knowledge of the representations which were made to the Duncan Commission in respect



to the Port of Halifax and a careful reading of the recommendations of that Commission indicate that the Commission had in mind two major factors in arriving at its conclusions, namely,- the placing of the Port of Halifax under the administration of a Commission which would have the direct obligation of coordinating the various factors and agencies involved in the operation of the port, as well as in the provision of adequate port facilities; and on the other hand, provide a body via the Commission which would energetically introduce the Port to all those who might be able to use it - In other words, vigorously endeavour to increase the traffic of the port. No suggestion, however, was made at any stage of the proceedings nor in the finding, that immediately upon the establishment of this Commission was the Port to be placed under the obligation of paying interest on all capital expenditures which theretofore had never been done.

Involved in the above is the question as to whether or not the future development of the Port of Halifax is to be proceeded with as a National obligation, without too great regard, for the moment, as to its earning ability or whether future development must be dependent entirely upon the ability of the Port to care for interest and return of all capital borrowed.

Unless the basis of Confederation, as detailed herein, and the East and West Policy, so-called, are departed from entirely, and unless this country decides to abandon the development of the Port of Halifax as a National asset,



the development of this port must proceed, not only to enable it to fulfil its function as a National port, but in order to permit it, as time goes on, to increase its revenue through increased traffic and eventually arrive at the position where it is self-supporting. Therefore, we say that for the moment at least, the decision as to the provision of facilities for this port, of necessity, cannot have too great regard to the immediate revenue which will be received therefrom, but rather a broad future outlook must be taken of the situation.

In view of the present situation as we find it, it is futile and unbusinesslike to permit a system to continue, whereby interest obligations are accruing which cannot, for the time being at least, be cared for out of revenue, and whereby adequate provision cannot now be made for the retirement of such capital obligations.

In this connection, however, we repeat that it is our opinion that the system of administration of the port as laid down by the Duncan Commission is sound, so long as the obligation of paying interest and providing a sinking fund in respect to borrowings from the Commission's revenue is not made an immediate necessity. In other words, there appears to be no alternative that if the development of this port is to be proceeded with that it must be done along the same lines as has been the case in respect to the development of the inland waterways of Canada and many of the public works of moment. In due



course, and we trust before many years, this port if so developed along National lines, should rapidly come to the position where it can care for all its rightful obligations, including future capital requirements.

We regret that we have not had the time nor the opportunity to study as we would have liked certain other important features dealing with the affairs of the port, which you will undoubtedly enquire into. However, we are pleased to give to your Commission the fullest information and data which we have at our disposal.

Respectfully submitted.

*E. G. Phillips* President  
*J. H. Fletcher* Commissioner  
*C. F. Merchant* Commissioner







THE PORT OF HALIFAX

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A STUDY



# THE PORT OF HALIFAX

## A Study

### INTRODUCTION

Halifax is situated on the Atlantic Coast of the Province of Nova Scotia in the Dominion of Canada.

Halifax Harbour contains about ten (10) square miles of deep water area and is one of the finest natural harbours in the world.

It is proposed to review the growth of this Port, to describe its present condition and to outline a programme for its future development.

### HISTORICAL OUTLINE

The City of Halifax was founded in 1749 on what was known as "Chebucto Harbour" on previous charts.

In the following year, the first settlement was made at what is now the Town of Dartmouth.

According to Akin's History of Halifax, the first Council contemplated the construction of a Quay for the infant city. Certain citizens, however, made application for the granting of waterlots for the construction of private wharves in 1750, and as it was considered by the Council that the construction of a Quay would be expensive, several water lots were granted at that time.

One of the applicants was Joshua Mauger and his name long remained associated with one of the city wharves. It is believed that the wharf at the foot of Jacob Street, now known as "Commercial Wharf" occupies the site of the original Mauger's Wharf.



After the foundation of the City, Halifax became important as a Naval Station.

In 1758, Admiral Boscawen sailed out of Halifax Harbour with a fleet of 157 vessels, for the siege of Louisburg.

#### NAVAL AND MILITARY WHARVES:

About 1755, the following wharves were built:

The North Battery was situated at the foot of Buckingham Street on Upper Water Street and is now known as "Ordinance Wharf".

The Middle Battery was located on Lower Water Street at the foot of George and Prince Streets and is now known as "King's Wharf".

The South Battery was located on Lower Water Street at the foot of Blower Street and is now the site of Corbett and Farquhar Steamship Companies private wharves.

The Principal, or Grand Battery was built about 1761, and located on Hollis Street opposite South and Fawson Streets. This property was taken over by the Royal Engineers and known as "His Majesty's Lumber Yard". The Nova Scotian Hotel stands on the site of this property.

The Dockyard: Construction was started on the present site in 1759. It extended along the Harbour front from Gerrish Street northwards to the present Halifax Shipyards' property.

What was known as the "Careening Wharf" and "Mast House" are believed to have been built in that year.

#### PRIVATE WHARVES:

According to Akin's History of Halifax, a wharf known as "Fillis' Wharf" was shown on an old map dated 1779, on the site where the Engineer's Wharf now stands.

There were also a number of other wharves shown on this plan.



Several other wharves were shown on a Plan dated 1783, e. g. Cater's Wharf which was located on the site where the Imperial Oil Wharf now stands at the foot of Duke Street; and Cochran's Wharf on the site where John Tobin & Company's Wharf now stands.

It is evident that from the earliest days, a Ferry was in operation between Halifax and Dartmouth. This Ferry operated from what was known as the "Market Slip" at the foot of George Street. The Dartmouth Ferry Dock is still located at this site.

Cunard's Wharf was located at the site of present Pier No. 2 at Deep Water Terminals.

#### SHUBENACADIE CANAL:

The problem of connecting Halifax Harbour with the upper waters of the Bay of Fundy by way of the Dartmouth Lakes and the Shubenacadie River, was discussed in the Nova Scotia Legislature in 1797.

The Shubenacadie Canal Company was incorporated in 1826 with a capital of 60,000 Pounds. James Hall who was a pupil of Telford, was Engineer. The first ground was turned at Port Wallace by the Earl of Dalhousie, on July 25, 1826. Forty stonemasons and masons with their families were brought out from Scotland for this work.

Difficulties were encountered, and in 1835 the work ceased after an expenditure of about 88,000 Pounds.

The Inland Navigation Company was incorporated in 1853 with a capital of 30,000 Pounds, to acquire the property, and they opened the Canal in 1861.

The Steam Vessel "Avery", 60 tons, went through from Halifax to Maitland and return.

The Canal was sold by the Sheriff in 1862 to the Lake and River Navigation Company, for 12,700 Pounds. It was operated by this Company until 1870. Small Steamboats and Scows and one 80-ton Barge were used to convey cargoes of lumber, cord-wood, building materials, etc. These boats were privately owned.



In 1870, fixed bridges were placed across the Canal by the Nova Scotia Government and by the Dominion Government Railways and Traffic was discontinued.

#### RAILWAY DEVELOPMENT:

The Port of Halifax has always held a very important place in the development of Canada's transportation system.

For many years prior to the construction of Railway lines in Canada, the project of a line of Railway connecting the Maritime Provinces with Upper and Lower Canada (Ontario and Quebec) occupied public attention. This attention was not only centred in the Maritime Provinces but was of particular significance to the Imperial Government. The reasons for this situation commanding such wide attention can be summed up as follows:

- (a) The necessity for creating an outlet on the Atlantic Ocean by rail from Ontario and Quebec and the Canadian North West, thus making the British Provinces in North America independent of a foreign country, when the St. Lawrence River was closed to navigation.
- (b) The necessity, from an Imperial point of view, of being able to transport troops, munitions and supplies into the Interior during the winter months.
- (c) The strategic importance of the Port of Halifax in times of National crises.

The earliest recorded suggestions of connecting the Maritime Provinces with Ontario and Quebec, or Central Canada, came in 1832, or 7 years after the Stockton and Darlington Railway in England was opened, this being the first passenger railway in the world. Mr. Henry Fairbairn published a notice in the United States Service Journal of 1832, in which he proposed a railway to connect Ontario and Quebec with the Atlantic.

From 1840 to 1860 this proposal was before the public in some form practically continuously, but the first railway actually to be constructed and operated in the province was from Albion Mines, Stellarton, to Pictou Harbour in 1838.



Following this, and with the assistance of monies forthcoming from the Provincial Governments in Nova Scotia and New Brunswick, some progress had been made in the construction of railways by the time the British North America Act was passed in 1867.

Action had been precipitated by the results of the Ashburton Treaty of August, 1842, which ceded a large portion of territory belonging to New Brunswick to the State of Maine and also the Fenian raids and a generally unsettled political situation within the British Provinces in North America. The province of Nova Scotia in 1854, began to construct a railway, which was completed in 1858 from Halifax (Richmond) to Truro and from Windsor Junction to Windsor, and New Brunswick constructed a line from St. John to Shediac, N. B. (Pointe du Chene).

In 1864 when the delegates from Ontario and Quebec came to the Maritime Provinces to discuss the Union of the British Provinces in North America, the possibility of such a union hinged largely on the construction of a Railway connecting Ontario and Quebec with the Atlantic Ocean.

In 1867, the year of Confederation, surveys were begun for a Railway to connect Truro with Riviere du Loup, about 140 miles east of Levis and Quebec City. The Grand Trunk Railway already had a line from Riviere du Loup along the South shore of the St. Lawrence to Montreal, and thence along the north shore to the Niagara frontier and Detroit River Crossing. Before this time construction had also begun on a line from Montreal to the North west. Certain sections were built by the Government, but they were finally turned over to a syndicate for completion and they are now an integral portion of the Canadian Pacific Railway.

The line from Truro to Riviere du Loup was opened in 1876 and was known as the Intercolonial Railway. Owing to the limited financial resources of Canada at this time, the Imperial Government had to guarantee the bonds of this Railway. The old North Street Station at Halifax was built in 1877.



In 1879, the Canadian Government took over by purchase and lease, the Grand Trunk Railway and other lines between Riviere du Loup and Levis and the Intercolonial Railway thereby became an unbroken line from Halifax to Levis. In 1898 the Drummond County Railway from Chaudiere Junction to Ste. Rosalie Junction was leased and running rights over the Grand Trunk Tracks obtained, thus extending the Intercolonial to Montreal.

One very important consideration entered into the construction of both the Intercolonial and Canadian Pacific Railways, viz: - the Imperial Government and Canadian authorities insisted that both Railways were to be constructed well within Canadian territory.

Surveys had been run from a purely commercial point of view which would have taken the Intercolonial Railway through the State of Maine and the Canadian Pacific Railway would have travelled via Sault Ste. Marie through the States of Wisconsin, Minnesota and North Dakota.

With respect to the Intercolonial Railway, a glance at the map will indicate the round-about way that it was necessary for this line to follow in order to keep within British territory, therefore ensuring the military requirements of this line and connections. Also the Canadian Pacific Railway line over the north shore of Lake Superior was withdrawn from the large traffic-producing areas, such as Milwaukee, Duluth and Minneapolis, if the Imperial requirements were to be considered.

Following the completion of the Canadian Pacific Railway to the Pacific Coast, Railway extension in Canada went forward very rapidly. The Canadian Northern, National Transcontinental and Grand Trunk were the more important developments. All these Railway Companies were heavily subsidized by cash payments and enormous land grants. It is impossible to estimate the total value of subsidies as a considerable portion of this land, as yet, has not been sold but the total land grants, exclusive of right-of-way, given by the Dominion and Provincial Governments amounted to 47,180,000 acres. The total cash subsidies by Federal, Municipal and Provincial authorities amounted to \$226,000,000 by the end of the year 1928. Bonds guaranteed by the Dominion and Provincial Governments up to December, 1928, amounted to \$604,000.000.



In addition to this, the Canadian National Railway System, as at December 31st, 1929, showed a deficit in profit and loss balance of \$513,000,000. The present capital liability of Railway lines in Canada as at December, 1928, totalled \$3,722,500,000.

#### RICHMOND WHARVES:

It is apparent that wharf construction was commenced in connection with the Nova Scotia Railway, prior to 1868-1869.

In 1873-1874, \$70,000 was spent on wharf construction at Richmond for Halifax Terminals.

#### WHARVES AT DEEP WATER TERMINALS:

It is apparent that the Railway tracks were extended southwards to Deep Water Terminals in 1882 and 1883.

About 1900 the area at present occupied by tracks west of Upper Water Street between Cornwallis and North Streets was expropriated by the Railway.

Present Pier No. 2 at this Terminals was constructed from 1912 to 1915 by the Department of Railways and Canals.

The existing Pier No. 3 was constructed about 1898 and existing Pier No. 4 was constructed about 1892. Both these Piers were constructed by the Inter-colonial Railway.

#### OCEAN TERMINALS:

This development was begun in 1913 under the Department of Railways and Canals. The scheme included the building of the connecting railway from Fairview to the South End Terminals; the construction of a classification yard along the shore of Bedford Basin between Fairview and Rockingham; the construction of present Berths Nos. 20, 21, 22, 23 and 24 of the Passenger Landing Quay, so-called; the construction of Pier "A" and the Breakwater at Black Rock at Point Pleasant Park, together with the expropriation of the necessary land.



In the early stages of the progress of this work the project was taken over by the Canadian Government Railways as the combination of the Intercolonial Railway and the Transcontinental Railway at that time was called.

The initial construction contracts for this project were completed in 1919.

These Terminals were operated by the Government Railways, which finally became the Canadian National Railway System until the Halifax Harbour Commission was constituted in 1928.

#### GRAIN ELEVATORS:

The first Elevator of timber construction was built on the east side of Upper Water Street at Deep Water Terminals, 1881-1882, by the Department of Railways and Canals. It was burned in 1892.

A second Elevator of timber construction was built 1898-1899 on the west side of Lower Water Street, near Cornwallis Street, at Deep Water Terminals, by the Department of Railways and Canals. It was dismantled in 1926.

A third Elevator of modern reinforced concrete construction was built at the Ocean Terminals in 1925 by the Department of Trade and Commerce.

An Elevator Extension to the Ocean Terminals' Elevator was completed in 1930 by the Halifax Harbour Commissioners.

#### HARBOUR DEVELOPMENT AT DARTMOUTH:

There is no doubt that private wharf construction, to a minor extent, was carried on in Dartmouth coincident with the development on the Halifax side of the Harbour.

At one time extensive timber ship-building yards were in operation on the Dartmouth side.

The Dartmouth Pier, so-called, was built by the Department of Public Works in 1924. This is of creosoted timber pile construction and is to date the most modern work on the Dartmouth side of the Harbour.



The French Cable Company have a wharf near Tufts Cove.

The Acadia Sugar Refinery has a timber wharf which was first built about 1884. It was destroyed by fire in 1912 and rebuilt shortly afterwards.

The wharf in connection with the Imperial Oil Company's Plant at Imperoyal on the Dartmouth side was constructed since 1916.



## GENERAL CHARACTERISTICS AND CONDITIONS

### GEOGRAPHICAL POSITION:

The Port of Halifax is located about midway of the southeast or Atlantic Coast of the Province of Nova Scotia of the Dominion of Canada, - Lat. 44° 0'-30' N., Long. 63° - 35' W.

It is 599 nautical miles from New York and 2,540 nautical miles from Southampton.

The position of the Port is about 175 nautical miles north of the usual steamship lanes, between New York and Europe.

### SAILING DISTANCES:

The Port of Halifax is nearer than any other North Atlantic Port to all Ports of Europe and Africia; to the principal Atlantic Ports of South America and to all Asiatic Ports as far east as Hong Kong.

The sailing distances from Halifax and other representative North Atlantic Ports are given in the following table.

Distance From	Halifax Nautical Miles	New York Nautical Miles	Boston Nautical Miles	Portland Nautical Miles	Montreal Nautical Miles
<u>To Europe</u>					
" Antwerp	2,759	3,310	3,128	3,050	3,281
" Bristol	2,462	3,006	2,831	2,753	2,977
" Liverpool	2,485	3,036	2,854	2,776	2,760
" London	2,719	3,270	3,088	3,010	3,241
" Bordeaux	2,647	3,279	3,016	2,938	3,169
<u>To So. America</u>					
" Buenos Ayres	5,701	5,838	5,804	5,849	6,421
" Montevideo	5,586	5,723	5,689	5,734	6,306
" Pernambuco	3,541	3,678	3,644	3,689	4,261
" Rio de Janeiro	4,611	4,748	4,714	4,759	5,331
<u>To Asia-China</u>					
" Hong Kong	11,046	11,336	11,320	11,334	11,569 via Suez
" Colombo	8,060	8,595	8,404	8,348	8,583 Canal
" Singapore	9,606	10,141	9,950	9,894	10,129 "
" Calcutta	9,260	9,795	9,604	9,548	9,783 "
" Bombay	7,618	8,153	7,962	7,912	8,141 "



Distance From	Halifax Nautical Miles	New York Nautical Miles	Boston Nautical Miles	Portland Nautical Miles	Montreal Nautical Miles
To <u>South Africa</u>					
" Cape Town	6,423	6,795	6,776	6,787	7,108
" N. Zealand					
" Wellington	8,866	8,500	8,701	8,749	9,671 via Panama Canal
" <u>Australia</u>					
" Sydney	10,070	9,704	9,905	9,953	10,875 "
" Melbourne	10,327	9,961	10,164	10,210	11,132 "
" <u>Philippine Islds.</u>					
" Manilla	10,949		11,293	11,237	11,472 Suez Can Panama " al.
" Manilla		11,405			

ENTRANCE:

The mouth of the Harbour is over five (5) miles wide.

The distance from the open Atlantic to the Passenger Landing Quay of the Port is 7.6 nautical miles.

The entrance as defined by the Harbour ranges has only two small deviations from a continuous straight line; its width varies between a mile and a half mile and its depth from 110 to 50 feet.

CHARACTER OF HARBOUR:

Halifax Harbour, including Bedford Basin, has an area of about 10 square miles of water over 45 feet in depth. The Harbour proper is about  $5\frac{1}{2}$  miles long and  $1\frac{1}{2}$  miles at the widest section, with an average width of  $\frac{3}{4}$ 's of a mile; its average depth is about 70 feet.

The bottom is rock overlayed with a comparatively shallow layer of clay, which in turn is covered with Harbour mud.

The tributary area which discharges its run-off into the Harbour is small and of rocky formation and consequently there has never been any trouble from silting.

The water of the Harbour is of uniform salinity closely approximating that of the ocean and it remains comparatively cold even in mid-summer.

The Harbour proper is free from ice throughout the year.



The upper part of the Harbour, Bedford Basin, is at present used for anchorage (capacity 100 ships) and speed trials for which there are measured mile marks.

Owing to the sheltered and land-locked conditions, the wide turning areas and the absence of currents, navigational difficulties are reduced to a minimum in this Harbour. At the Port of Halifax it is practicable to berth even such ships as the S. S. "Olympic", under their own power and without the aid of tugs.

AIDS TO NAVIGATION:

The general set of the outside current is S. W. about  $\frac{1}{2}$  to 1 knot per hour.

The approach to the Harbour is free of all danger and the entrance is marked by Sambro Light Vessel and Sambro Island, on which there is a good light and telephone communication to Chebucto Head.

Chebucto Head Light on the Western shore and Devil's Island on the Eastern shore, mark the entrance to the Harbour.

Chebucto Head has a good light and there are powerful fog horns on each station.

Close to Chebucto Head is a wireless station with direction finder, which can give bearings to approaching ships, enabling them to steer a safe course into the pilotage grounds off Chebucto Head.

The pilot boats are fitted with wireless telephones in connection with the signal station on Citadel Hill, so that it is possible to establish communication with vessels in thick and/or bad weather when a pilot is unable to board them.

The entrance to the fairway is marked by two large buoys, the outer and inner automatic light and whistling buoys, and the course inwards is almost straight. The adjacent shoals, Neverfail, Lichfield, Thrumcap and Mars Rock being marked by buoys. From below Sandwich Point the course to Quarantine Grounds is marked by range lights. Thence up the Harbour a ship can pass on either side of George's Island either to anchorage or to berth at one of the Piers.



TIDE RANGE:

The Tide Range at Ordinary Spring Tides is 6.6 feet and at Neap Tides about 4 feet. The highest tide recorded since the establishment of the Government Tidal Gauge at Halifax is 9.35 feet. It is rare that tides as high as 9 feet occur.

CURRENTS:

Within the Harbour proper currents due to tides, etc. are almost imperceptible. At the Narrows the maximum current is  $\frac{3}{4}$  a knot per hour.

TEMPERATURES:

The attached chart shows the variation in temperature as recorded by the Meteorological Bureau for the period 1920 to 1930.

FOG FREQUENCY:

The accompanying chart shows the occurrence of fog for the period 1925 to 1930.

WINDS:

A careful study of the records for a ten-year period indicated that the prevailing winds were generally from the northeast to the west and that winds of greater intensity than 30 miles an hour were generally from these directions also.

Heavy winds from the south to the southeast, i.e. in the direction of axis of the Harbour entrance were relatively infrequent and generally of the least intensity.

SNOW-FALL:

The following table shows the maximum recorded snow-fall for any day during the period 1926-1931 inclusive in inches:

Year	Dec.	Day	Jan.	Day	Feb.	Day	Mar.	Day	April	Day
26		7.4	27th	7.8	2nd	2.2	20th	7.0	1st	
26-27	5.9	16th	2.0	8th	8.7	15th	2.1	26th	2.0	8th
27-28	1.8	5th	4.2	20th	2.8	10th	3.1	8th	0.9	2nd
28-29	2.4	8th	3.6	12th	2.0	21st	3.0	26th	2.1	23rd
29-30	1.5	18th	3.6	12th	7.5	5th	2.0	18th	0.2	
30-31	8.6	26th	5.2	10th	3.8	12th	8.4	18th	0.0	



Traffic is never actually prevented or seriously impeded by snow in Halifax.

ICE CONDITIONS:

History records that in the winter of 1821 the main harbour was frozen over.

In modern times, however, nothing like this has ever occurred.

Occasionally Dartmouth Cove has been iced over. The Northwest Arm freezes over every winter, sometimes as far down as Franklyn Park; and the Eastern Passage, so-called, freezes some winters. It appears that, on a cold still night, considerable area of the Harbour may form a thin coating of ice if left undisturbed. This condition seldom occurs and with the passage of tugs and general shipping in the Harbour it is not now likely to occur.

The condition in Bedford Basin is somewhat different. The Bays and Coves, such as Bedford, Fairview and Navy Island, freeze over every winter. This condition does not seem to apply to Birch Cove. Ice sometimes forms in these Coves from one to two feet in thickness. The Basin itself freezes over most winters. Usually the ice is not more than 2 inches thick. It practically never occurs until after January 1st, and is clear by about the middle of March.

Experience has shown that the reach extending southwards from Birch Cove along the Rockingham Yard is least liable to freeze over, probably on account of the prevailing wind conditions.

The Department of Marine are usually asked to clear the ice from the Bedford Basin each year. The S. S. "Stanley" carried out this duty on February 7th and 24th and March 6th of 1930 and January 28th and February 9th, 1931.

It would seem that during ordinary seasons there are only about 2 months out of the year in which there would be any ice trouble in Bedford Basin and that it would only require a moderate amount of patrol work by a suitable boat to keep an open way to Berthage in the Basin, especially along the Rockingham reach. Generally a considerable amount of floating ice gathers at the Fairview Cove.



### MARINE BORERS:

There is little or no evidence at the Port of Halifax of the activity of the Torredo. The Linoria however, is fairly active in this Harbour.

It has been demonstrated, however, that creosoted timber is not affected by Marine Borers. Creosoted piles have recently been withdrawn from old wharves in Halifax Harbour after being in place for 35 years and they were in first-class condition, uninjured by Borers and sound enough to be re-used in new work.

### POR TORGANIZATION AND REGULATIONS:

The Port of Halifax consists, on the Halifax side of the Harbour, of the Government Terminals Properties which are vested in the Department of Marine, other Government Marine Properties under the Department of National Defence and privately owned wharves and other water-front properties.

On the Dartmouth side of the Harbour there is a public pier which was built by the Department of Public Works and is operated directly by the Department of Marine; the Atlantic Headquarters consisting of wharf, store-rooms and offices of the Department of Marine; and a number of private wharves.

The Halifax Harbour Commissioners, incorporated by Dominion Government Legislation in 1927, control the Harbour and administer the Government Terminal Properties on the Halifax side of the Harbour.

The Commissioners are empowered by the Incorporating Act to make By-Laws, appoint officers and perform such other acts as are necessary in their office.

They are enabled by Acts of Parliament to borrow money from the Dominion of Canada, by means of Debentures in order to provide for the capital expenditure which they may find necessary for construction and equipment; they may also levy charges on Ships and Cargo in accordance with their By-Laws in order to provide for revenue with which to carry on the services of the Port.

At the Terminals administered by the Harbour Commissioners, all berths are open for allocation to any Steamship. Steamship owners or agents apply in advance for berthing and transit shed accommodation, giving specifications of the ship and the character of its cargo.

### NAVAL AND MILITARY STATIONS:

Halifax is the oldest British Naval Station in Canada, and is at present one of the two defended Ports in Eastern



Canada. It is a Station of the Royal Canadian Navy.

Since its founding, the City and Harbour entrance have always been defended by formidable land fortifications.

Various units of the Canadian Department of National Defence are stationed at Halifax.

For Reference Purposes The Following Charts Accompany This Study:

No. 416 - Halifax Harbour

No. 2410 - Nova Scotia, South East Coast, Mars Head to Shut In Island.

Chart showing Temperature, Fog and Rain-fall in Halifax.



## EXISTING FACILITIES AND EQUIPMENT

### ADMINISTERED BY HALIFAX HARBOUR COMMISSIONERS

#### RICHMOND TERMINALS

These Terminals as now administered by the Halifax Harbour Commissioners, consist of an irregular shaped area containing about 320,000 square feet or 7.35 acres.

Pier No. 9: A quay face is about 700 feet long running parallel with the shore. Draught at low water about 30 feet. The south quay, approximately at right angles to the shore, is about 220 feet long and provides a draught varying from 30 to 5 feet for barge berths.

A considerable portion of the quay section is leased to private industrial concerns. The Canada Cement Company has a modern unloading and storage plant at the north end of the property.

The Harbour Commissioners have reserved two portions of the quay for open storage.

The Stock Sheds: In addition to the quay space, but included in the 7.35 acres is a strip about 122 feet wide, extending southerly from the above described quay space and between the Halifax Shipyards Limited on the one side and the Canadian National Railways on the other side. This strip forms the site of the stock sheds and provides an entrance roadway to the quay space.

The Stock Sheds consist of a main building and an interconnected system of branding houses and runways. The main building is of timber construction 500 feet long by 79 feet wide by 14 feet high at the posts, with a pitched roof.



Stalls and pens fitted with metal water troughs and water drainage connections supply accomodation for 1,000 head of cattle. A system of timber runways extends from the north end of the Main Building across the quay area to the main quay face for use in transferring cattle to shipboard.

Railway Connections: The whole area is well served by railway connections. It lies just east of the C. N. R. Main Line to Deep Water Terminals and Yard Tracks at this point. A double track spur extends along the main quay face and a number of spur lines are located along the west side of the area. The Main Building of the stock sheds is served by a track on each side.

Roadway Connections: The Roadway Entrance is from Barrington Street, one of the main City thoroughfares.

### DEEP WATER TERMINALS

Deep Water Terminals commences at a point about one and one-quarter miles south from the southern end of the Richmond Terminals. The intermediate water front is occupied by the Halifax Shipyards and Dockyard. The frontage from the southern boundary of the Dockyard to the southern boundary of these Terminals at the foot of Proctor Street is about 1930 feet. The land area is about 140,000 square feet or 3.3 acres.

The property is served by the C. N. R. Trackage which connects around the east shore of the Halifax peninsula with the main line at Fairview. Water is supplied by three 6-inch cast-iron pipes from the City System and several hydrants are located along the central portion of the land area. A 6-inch water connection is carried out to Pier No. 2 and branch pipes extend the full length of the Pier to supply standpipes for fire protection and outlets for ships' supply.

At present the steam supply is taken from the C. N. R. Boiler House located near the southwest corner of the property. The electrical connections are taken from the City service.

The Piers of these Terminals are as follows:

Pier No. 2 and Transit Shed, which is of reinforced concrete construction was built during the years 1912 to 1915. The Pier is about 780 feet long by about 235 feet wide.

The depth of water varies from 33 feet to 57 feet.



The Shed is two storey, 680 feet long by 200 feet wide of reinforced concrete construction, fitted with continuous metal sliding doors along each side, stairways, cargo chutes and escalators.

The Transit Shed is fitted with Office accommodation for Customs, Steamship Companies, etc. and Rest Rooms for Stevedores.

Four Railway tracks depressed 4 feet below Shed floor level, serve the Shed one on each side between the Shed and the Pier edge and two running down the center of the Shed.

Pier No. 3 which is about 617 feet long by 160 feet wide is of timber pile construction. The depth of the water at its berths varies from 35 to 45 feet at low tide.

A single storey timber Transit Shed, 548 feet long by 125 feet wide, equipped with the usual Steamship, Customs and other Offices, is located on the Pier.

It is served by 4 depressed tracks, one on each side between the Shed and the Pier edge, and two running down the center of the Shed.

Pier No. 4 is of timber pile construction similar to Pier No. 3.

It is about 544 feet long by 92 feet wide. The depth of water along the south berth varies from 25 to 30 feet and along the north from 18 to 23 feet.

It is served by a single storey Transit Shed 433 feet long by 56 feet wide with two depressed tracks, one on each side between the Shed and Pier edge.

#### OCEAN TERMINALS:

The Ocean Terminals, as at present in operation, constitute the first unit of an extensive scheme of Port Development at the South end of Halifax.



This scheme was laid out on the basis of a Passenger Landing Quay, 6 Basins and 5 Piers, with a protecting Breakwater at the South. It also included a new double-track railway connection around the west side of the Halifax peninsula, together with extensive Terminal Yards to serve these Piers and Quay.

The Railway connection and the Port Facilities as described below were constructed some years ago. An additional Pier with Basins is now in course of construction.

#### The Bulkhead Passenger Landing Quay

Extends 2,007 feet along the Harbour front in a northerly and southerly direction. From the south end of same the Quay runs at right angles westerly for about 700 feet, and thence in a southwesterly direction another 500 feet forming the northern boundary of Basin No. 1. Depth of water at low tide is 45 feet, along the Passenger Landing Quay, 35 feet at east berth and 30 feet at west berth of Basin No. 1.

On this Landing Quay are located the Harbour Commissioners' Administration Building and Transit Sheds, as follows:

Administration Building: Built 1929. Three storey reinforced concrete and tile construction faced with brick. Size 100 by 66 feet. It is built on concrete foundation walls and pedestals resting on timber piles driven into the fill. This building is situated about 60 feet from the north end of the Landing Quay.

Transit Shed No. 20: Built 1929 - adjoining the Administration Building and extending southerly along the Landing Quay. This is a single storey Shed, 596 feet long, by 95' wide. It is of steel frame construction resting on concrete foundations and timber piling, with a concrete floor mastic covered. The height from floor level to eave is 27 feet. The roof deck is of timber construction covered with five ply tar and gravel roofing. The walls are covered by corrugated sheet metal. The east and west sides of the Shed are fitted with continuous sliding timber doors.



Transit Sheds Nos. 21 -22: Completed 1926.

These two sheds form a continuous building, 1,262 feet long by about 96 feet wide. They join the southern end of Transit Shed No. 20 and extend southerly along the Landing Quay to Basin No. 1. They are two storey steel frame construction 40 feet high from floor to eave on the west, or track side, and 54 feet on the east, or Harbour side. The foundations are concrete walls and pedestals on concrete piles. The floors are reinforced concrete, the lower floor being covered with Mastic. The roof decks are of laminated timber with five ply tar and gravel roofing, and the walls of the Sheds proper are covered with Asbestos Protected Metal, except at end portions which are brick walled. The Transit Sheds are fitted with continuous sliding timber doors on the lower floor 7'-9" high on the track side and 18'-9" on the Harbour side. The second floor has continuous sliding doors, 13' high, on the Harbour side only.

A two belt enclosed Grain Conveyor Gallery located just under the roof, extends the full length of these two Sheds along the Harbour side.

Two electrically operated Travelling Grain Spouting Towers are carried on rails on the roofs of these Sheds. These Towers take the grain from the Conveyor Belts and spout it into Ships' holds, at any required position along the Landing Quay.

These Sheds are also equipped with cargo hoisting beams pivoted over the Harbour edges of the roofs.

The central portion of the continuous building forming these two Sheds is brick walled and forms an Office Building about 110 feet long. The ground floor of this portion is occupied by Steamship Companies' Offices. The Upper Floor is occupied by the United States Officials. The Canadian Immigration Offices are on the second floor of Transit Shed No. 21 and the Canadian National Port Agent's Offices and Offices of the Dominion Atlantic Railways occupy a portion of the upper floor in Transit Shed No. 22.

A brick fire wall separates Transit Shed No. 20 from N<sub>o</sub>. 21. Transit Sheds Nos. 21 and 22 are divided by brick fire walls, equipped with automatic fire doors, and these together with the brick walls of the central Bay permit the Transit Shed facilities on the Landing Quay to be separated into five sections, in case of fire,



A cargo landing or trucking platform outside of the Sheds, of concrete, mastic finished, extends along the whole length of the Landing Quay on the Harbour side. It is about 12 feet wide and is at the same elevation as the floor of the Sheds.

Transit Sheds Nos. 20, 21 and 22 are served by five tracks along the west side, the floors of the Sheds being 4 feet above rail.

Transit Shed No. 23 situated on the Passenger Landing Quay on the north side of Basin No. 1, is one storey of timber frame construction 506 feet long by 90 feet wide and 17 feet high at eaves. The foundations are concrete walls and pedestals. The floor is concrete, covered with Mastic. The walls are covered with Clapboards. There are timber sliding doors on both sides of the Shed.

Three depressed tracks serve the north or land side of the Shed, and one track passes along the Basin side, at the same elevation as the Shed floor.

Transit Shed No. 24 is situated on the Passenger Landing Quay at the western end of the north side of Basin No. 1. It is of timber frame construction 440 feet long by 90 feet wide. It is one storey, being 17 feet high to the eaves. The floor is concrete covered with asphalt plank. The foundations are concrete walls and pedestals. This Shed was converted into a frost-proof and temperature-regulated warehouse in 1930. A continuous concrete tunnel with open top covered with cast iron gratings, extending along the north and south sides and east end of the Shed contains the steam-heating system. Return air ducts from the floors of the Shed maintain the air circulation. Refrigerator-type doors have been installed on both the sides and ends. Double windows have been installed over the doors on each side, the walls insulated and an insulated underhung ceiling constructed.

Three depressed Tracks serve the north or land side of the Shed and one track passes along the dock side at the same elevation as the floor of the Shed.



Pier "A"

Extends out from the shore in an easterly direction 1,250 feet. It is 320 feet wide at the outer end, and 350 feet wide at the inner. The depth of water at all berths is 45 feet at low tide. Basin No. 1, situated between the Landing Quay and Pier "A" is about 350 feet wide at the east end. This width is maintained for about 700 feet and then the Basin decreases to 95 feet in width at the west end.

Three Transit Sheds are located on this Pier as follows:

Transit Shed No. 25 situated on the northwest corner of Pier "A", occupying the inner berth on the south side of Basin No. 1. It is of timber frame construction, 594 feet long by 90 feet wide, on concrete foundation walls and pedestals. The floor is concrete covered with Mastic. It is a one storey building 26 feet high to the eaves. There are timber sliding doors on both sides of the Shed. Walls covered with Clapboards.

Three tracks serve the south or land side of the Shed, the level of rail being 4 feet below the floor of the Shed. A cargo landing or trucking platform, about 12 feet wide, extends along the Basin side of the Shed. A single track at an elevation 4 feet below the floor of the Shed, runs along this side of the Shed between the platform and the edge of the Pier.

Transit Shed No. 28, situated on the southwest corner of Pier "A", occupying the inner berth on the north side of Basin No. 2. It is of timber frame construction 550 feet long by 90 feet wide, on concrete foundation walls and pedestals. The floor is concrete covered with Mastic. It is a one storey building, 26 feet high to the eaves. This Shed is fitted with 20 steel Ogden-type Turnover Doors about 14 feet high on the Basin side, and continuous sliding timber doors, 8 feet high on the land side. Walls are covered with Clapboards.

The Shed is served by three tracks on the land side, the rail being 4 feet lower than the Shed floor; and one track on the Basin side. A cargo landing or trucking platform extends along the Basin side, continuing along past Transit Shed No. 27 to the east end of Pier "A". It is about 12 feet wide of concrete construction covered with Mastic.



This Shed contains a five room suite of Offices for the use of the Canadian National Steamship Officials, floor area - 2,180 sq. ft.

Transit Shed No. 27: This is a new, single storey Shed built in 1929-30, situated on the southeast corner of Pier "A", occupying the outer berth on the North side of Basin No. 2. The main Shed is 655 feet long by 90 feet wide without interior columns. A three-track Train Shed, 42 feet wide extends the whole length of the Shed, on the north side.

The Main Shed has structural steel columns on concrete foundations. The roof is segmental of Lamella type, Gyproc lined on the inside and covered with Murray made, type "A" five-ply, built-up roofing. Continuous sliding doors are furnished on both sides of the Shed. Those on the Basin side are about 19 feet high and on the Train Shed side about 15 feet. The height from floor to eaves, about 25 feet. The floor is of concrete surfaced with Asphalt Mastic.

The Train Shed has structural steel columns, roof beams and purlins. Timber roof covered with tar and gravel and lined on the inside with Toncan Sheet Metal.

A brick fire wall, with fire door, forms a division between this Shed and the eastern end of Shed No. 28. A brick wall forms the east end of both the Main and Train Sheds. The other walls of both the Main and Train Sheds are covered with corrugated sheet metal.

The cargo landing platform described in connection with Transit Shed No. 28, extends the whole length of the Shed on the Basin side. The Shed is served by one track on the Basin side and three tracks with cross-overs in the Train Shed. Rail level is 4 feet below floor level in Main Shed.

A special Temperature-regulated Storage for the holding and ripening of West India Fruits and Vegetables is provided in Shed No. 27. It consists of four insulated chambers, each about 30' x 24' with connecting vestibules and corridors. In two of the chambers, temperatures from 40° to 55° Fahrenheit can be maintained and in the other chambers temperatures from 50° to 70°.



Berth No. 26 on this Pier is at present occupied by the Dominion Coal Company, with their Coal-handling Plant and Coal Storage.

Water and Sewerage:

The Ocean Terminals area, including Berths and Transit Sheds Nos. 20 to 28 inclusive, is completely served with water and sewerage systems. The water supply is taken from the City system.

Offices, Hot Rooms, etc.

Transit Sheds Nos. 20 to 28 inclusive, are provided with Offices, Gear Rooms, etc. for the Customs, C. N. Railways and the various steamship and stevedoring companies.

There are also heated Rest-Rooms and Latrines for the Stevedores.

The various Transit Sheds are provided with special compartments for heated and locked storage.

Heating System:

Steam-heating is used for the Immigration Quarters and all heated temperature regulated spaces in the Transit Sheds. Purchased steam is used for one portion of the property and a central Boiler Plant, operated by the Commissioners, provides for the remainder of the heating requirements.

FIRE-PREVENTION SERVICE AND EQUIPMENT:

Transit Sheds and other buildings of the Harbour Commissioners are furnished with hand chemical extinguishers, pails and water casks.

Five 40-gallong hand portable indoor type chemical engines on wheels and one portable hose reel are available at a central point at the Ocean Terminals. Two portable hose reels are available at Deep Water Terminals.



Very efficient and complete water distribution systems, consisting of 6, 8, 10 and 12-inch cast iron pipe laid below frost level, connected with the City Water System, serve the several Terminals. These systems are provided with numerous hydrants at strategic points and complete series of standpipes in the interiors of all Sheds and Buildings. The standpipes are equipped with hose reels and outside hose houses are located at central points in each Terminal.

Fire alarm boxes connection with the City alarm system have been installed to serve the various Terminals.

At the Ocean Terminals a motor-driven fire pump is directly connected to the Water System. This pump is housed in a fire-proof concrete structure, has a capacity of 2,500 gallons per minute at a pressure of 130 pounds per square inch. This pump could be put in operation in the event of failure of pressure of the City Water Supply; or if sufficient quantity could not be obtained from the City System, it could be put into connection with the salt water supply of the Harbour and would deliver same under high pressure to all parts of the system.

Transit Sheds are provided with fire walls and automatic fire doors as described under Section 1

#### COST OF STRUCTURES

On properties administered by the Harbour Commissioners, is as follows:

The following tabulation gives the general cost data regarding these properties:

Terminals	Exp. prior to Transfer to H.H.C.	Exp. since Transfer.	Present Evaluation estimated on present costs with allowance for Depreciation
Richmond Terminals	186,955	28,642	268,000
Deep Water Terminals	1508,134	430,090	1,462,090
Ocean Terminals	<u>10874,377</u>	<u>2,011,290</u>	<u>17,176,741</u>
Total -	12,569,466	2,470,022	19,492,831



### COST OF LAND

Estimated cost of Land Areas on these properties are as follows:

Richmond Terminals -	3,062.15
Deep Water Terminals	290,766.21
Ocean Terminals	235,884.28
	<hr/>
	529,712.64

### CONDITIONS OF TRANSFER OF TERMINAL PROPERTIES FROM THE C.N.R.Y.

These Properties were transferred from the Minister of Railways and Canals and vested in the Department of Marine and Fisheries by P. C. dated 16th of August, 1928, on the condition that the Department of Railways and Canals should have the ownership and control for railway purposes of all railway trackage and sidings.

It was further understood that the Department of Railways and Canals should maintain all trackage and should provide and install new trackage as required from time to time by the development of Port Facilities.

It was further stipulated that the Department of Railways and Canals should have office and other accommodation free of charge for Railway and Canadian National Steamship purposes, upon the lands and in the structures of the Harbour Commissioners' with the understanding, however, that they should pay for heat and electricity.

The Harbour Commissioners have assumed responsibility only for the capital expenditure incurred since the transfer.

### GRAIN ELEVATORS

The Grain Elevators and Conveyor Galleries connecting them with the docks are located at the Ocean Terminals.

There are two reinforced concrete Elevators.

No. 1 is 209 feet long by 70 feet wide by 130 feet high, containing 48 cells 16' 9" diameter, 108 feet high and 33 interspaced cells. Total capacity 1,129,300 bushels.



No. 2 is 261 feet long by 70 feet wide by 130 feet high, containing 56 cells 16' 9" diameter, 97 feet high and 39 interspaced cells. Total capacity 1,106,150 bushels.

Working and Shipping House No. 1, - located at the northeastern end of Elevator No. 1 is built of structural steel covered with corrugated iron. It is 80 feet by 66 feet by 190 feet high. The scale equipment is two 60-ton and three 30-ton beam type scales.

Working and Shipping House No. 2, - between and connecting the two elevators, is built of structural steel covered with corrugated iron and is about 61 feet by 25 $\frac{1}{2}$  feet by 150 feet high. Scale equipment is two 30-ton beam scales.

Cleaning House: Built of structural steel covered with corrugated iron, is 16 feet by 20 feet by 12 $\frac{1}{2}$  feet high. This house contains one No. 11 Monitor Type "B" Warehouse Separator having a capacity for cleaning about 10,000 bushels per hour. There is also an Automatic Bagger of 5-bushel capacity, capable of filling 60 bags, or 250 bushels, per hour.

Unloading House: Built of structural steel covered with corrugated iron is 100 feet long by 43 feet wide by an average of about 35 feet high. This building contains the Car Dumper and pits. The Car Dumper is a Metcalf suspended type of 7 cars of 2,500 bushel capacity per hour. There are two pits of 2,500 bushel capacity.

Car Puller: - This is a double winch puller capable of handling 5 cars of grain at one time. It is driven by a 3-phase, 60 cycle, 550 volt, 40 H. P. Motor at 682 R.P.M. This puller is housed in a structural steel corrugated iron covered building 22 feet by 22 feet one storey high.

Conveyor System: - The Grain is conveyed from the Elevators to the Shipping Houses and thence to the dock sides by a moving belt system passing through enclosed overhead galleries. There are about 5,324 lineal feet of Galleries, and the total loading capacity is 90,000 bushels per hour. The berths served are Nos. 21, 22, 23, 24 and 25. At Berths Nos. 21 and 22 the loading is done by means of Travelling Spouting Towers on the roofs of Transit Sheds Nos. 21 and 22. These are electrically driven and are supplied by one belt each. The capacity of each is 15,000 bushels per hour.



Railway Track Facilities: - There are approximately 6,200 lineal feet of track in the Elevator yards. This will permit the storing of about 125 cars.

Office and Shops:- The Administrative Staff, Shops and Rest-rooms are housed in two small one storey brick buildings, approximately 51 feet by 22 feet and 16 feet by 20 feet. The smaller building contains the Rest-room, Electrical Switchboard with Outdoor Sub-Station attached. The larger building contains the Superintendent's Office, Storeroom, Electrical Superintendent's Workshop and the central Telephone Operating Board which controls a telephone system throughout the Elevators, Shipping Houses and Galleries. These two buildings are heated by a hot-water system from a boiler located in the smaller building.

#### GENERAL STORAGE:

The storage capacities of the Harbour Commissioners' Transit Sheds are as follows:

Ocean Terminals: -	414,000 sq. ft. gross
say,	4,000,000 cu. "
Deep Water Terminals	226,000 sq. "
say,	2,200,000 cu. "
Total -	640,000 sq. Ft. Gross
	2,200,000 Cu. " "

#### TEMPERATURE-REGULATED STORAGE:

The capacities of temperature-regulated storage operated by the Harbour Commissioners are as follows:

At Ocean Terminals, -	42,000 sq. ft. Gross
say,	400,000 cu. " "
At Deep Water Terminals	94,000 sq. ft. "
say,	900,000 cu. " "
Total,	136,000 Sq. Ft. Gross
	1,300,000 Cu. " "

#### IN STORAGE:

The following areas are available on the Harbour Commissioners' Properties for open storage:

Ocean Terminals -	5,600 square feet
	50,500 " "
Total	56,100 " "



WATER:

Each Berth at the Ocean Terminals is equipped with two ship's supply outlets, each outlet fitted with a Siamese connection to take two  $2\frac{1}{2}$ -inch hose. Water can be supplied at each outlet at the rate of 500 gallons per minute, or 150 tons per hour.

At Pier No. 2 at Deep Water Terminals, there are two outlets at each Berth, fitted for  $2\frac{1}{2}$  diameter hose.

In all cases outlets for watering ships are equipped with individual meters.

Ships can obtain water while at anchorage or otherwise, from two privately owned and operated water boats.

All water supplied comes directly from the City of Halifax Water System, which is unrivalled for its purity.

ANCHORAGE:

The Harbour of Halifax, with its 10 square miles of area, affords practically unlimited facilities for anchorage. The formation of the Harbour bottom provides good holding ground.

Ships are permitted to anchor anywhere in the Harbour, except in the fairway, in front of the ferry slips and at two localities where there are submarine cables. The latter are plainly marked.

ELECTRIC CURRENT:

110 volts, 60 cyc. 3 ph. alter. current, is available at all Transit Sheds for lighting purposes. Light and Power charges are .05¢ per K. W. Hour.

TELEPHONE SERVICE:

Pier side telephones are available at Berths Nos. 27 and 28 at present.

WEIGHING:

The following weighing equipment is available:



Ocean Terminals

Transit	Shed	20.	2,	3-ton	stationary	platform	dial	scales
"	"	21	2,	"	"	"	beam	"
"	"	22	2,	"	"	"	"	"
"	"	23	1,	"	"	"	"	"
"	"	24	1,	4-	"	"	"	"
"	"	25	1,	"	"	"	"	"
"	"	27	2,	3	"	"	dial	"
"	"	28	1,	5	"	"	beam	"

Also 10 (C.N.R.) 1-ton Portable Beam Scales

Deep Water Terminals

Pier No. 2

3 (C.N.R.) 1-ton Portable Platform Beam Scales  
1-Portable 600-lb. Plantform Beam Scale

Pier No. 3

2 6-ton Stationary Platform Beam Scales  
3 (C.N.R.) 1-ton Portable Platform Beam Scales

Pier No. 4

1 6-ton Stationary Platform Beam Scale.

NOT ADMINISTERED BY HALIFAX HARBOUR COMMISSIONERS

DARTMOUTH PIER:

This Pier was built by the Public Works Department of the Dominion Government in 1924, and transferred to the Department of Marine for operation. It is 370 feet long by 60 feet wide and is of creosoted timber pile construction. The depth of water is from 27 to 30 feet at the outer end and 16 to 18 feet at the inner end.

This Pier is located a short distance north of the C.N.R. Terminal Yard, Dartmouth, and is served by two spur tracks, one on each side of the Pier extending full length.

There is no transit shed on the Pier. It has been used generally in connection with the lumber trade



## PRIVATE WHARVES:

On the Halifax side of the Harbour there are about 44 privately owned wharves, with an area of about 500,000 sq. ft; the depth of water at these wharves varies from 20 to 35 feet; transit shed accommodation on these wharves totals about 150,000 sq. ft. These wharves generally are of timber pile construction, except in the case of the Furness Withy Steamship Company's Wharf, which is of modern reinforced concrete construction carried on cylinders with a reinforced concrete Transit Shed.

On the Dartmouth side of the Harbour there are a number of privately owned wharves.

## RAILWAY TERMINALS:

Halifax is the Atlantic Terminus of the Canadian National Railway System.

The Main Line of the C. N. R. through Moncton and Truro ends in Halifax.

The C. N. R. Southwestern Line (the former H. & S. W. Railway) extends from Halifax to Yarmouth.

The Eastern Railway, or the Dartmouth to Deans Branch of the C. N. R. begins at Dartmouth, across the Harbour from the Halifax Terminals and is connected via Windsor Junction with Halifax.

The D. A. R. (a C. P. R. Subsidiary) runs from Yarmouth to Halifax, coming in over the C. N. R. from Windsor Junction. The Line from Windsor Junction to Windsor was built by the Government and is leased to the D. A. R.

The C. N. R. approaches Halifax by the West Shore of Bedford Basin. The Main Line now enters Halifax along the West side of the Peninsula to the Railway Station which is located at the Ocean Terminals.

From Fairview, a branch extends around the north and east shores of the Peninsula and passing Richmond Terminals extends as far as the Deep Water Terminals.

Within recent years an extensive storage and classification yard has been constructed along the shores of Bedford Basin between Rockingham and Fairview. This Yard has a capacity of 1,280 cars. The main line operation of freight trains terminates at this Yard and cars are handled thence to the Ocean Terminals or to Deep Water, etc. by shunting engines. A double-track line connects Fairview with the Ocean Terminals and with the Deep Water Terminals.



At both Richmond Terminals and Deep Water Terminals, there are extensive storage yards with team tracks and other facilities, with capacities of 840 and 640 cars respectively.

At the Ocean Terminals there is at present a very large yard capacity providing for about 1,350 cars. An extensive area is available at these Terminals for future trackage and yard enlargement to serve future Piers as they are constructed.

All quay spaces and Piers are served by an exceptionally complete system of trackage, as described under Section 1, which provides in all for about 350 cars.

Canadian National Railways under present arrangements operate all railway yards and trackage at the Terminals.

#### IMMIGRATION QUARTERS AND FACILITIES:

The Immigration facilities are located on the upper floor of Transit Shed No. 21 and in the Immigration Building situated on the east side of the Marginal Road, and about 80 feet westerly from and parallel to Transit Shed No. 21. This building is one storey with brick walls, 22 feet high at the eaves and with pitched roof. The foundations are concrete walls and pedestals, resting on timber piles. The floor is concrete covered partly with Mastic and partly Hardwood. The roof, which is of laminated timber is supported by steel trusses and purlins.

This building is connected with the facilities on the upper floor of Transit Shed No. 21, by means of an elevated covered passageway. The portion bridging the tracks is of steel construction. The balance is timber framed.

The method of handling Immigrants is as follows:

When the Immigrants leave the ship they are received in the Examination Quarters in Shed No. 21, where their eligibility to enter the country is established. Those not qualified are held in the Detention Quarters, and those admitted are grouped according to their destinations and the necessary transportation documents arranged. They are then conveyed through the passageway to the Immigration Building where food is available at the canteen and large dining-room and where baggage is checked. Trains are made up and immigrants entrain from the platform of this Building.



## COLD STORAGE, PRE-COOLING AND DRY STORAGE

The N. S. Public Cold Storage Terminals, Ltd. opened a modern cold storage plant in the summer of 1929. This plant is situated immediately west of Basin No. 2 at the south side of Pier "A", and in the heart of the Ocean Terminals area.

This Company acquired a 99-year lease of an area south and west of Pier "A" containing about 7.25 acres and including the constructed quay wall, extending southerly from the south side of Pier "A" and a water lot or berthage extending out into the Harbour from the Quay Wall for 460 feet on the site originally designated for the future Pier "B" and along the north side of the existing core fill for that Pier.

This property was leased by the Department of Railways and Canals to this Company in the spring of 1927, all present Harbour Commissioners' properties at that time being vested in this Department.

The Railway Department at that time considered that it would be in the interests of the railway system and also of the Harbour and City of Halifax, to encourage the development of this plant.

The Company was financed by public issue of securities and the work was carried out subject to the Cold Storage Subsidy Act of the Department of Agriculture at Ottawa. The Canadian National Railway furnished the trackage to this plant and are under agreement to operate same.

This plant is of fireproof construction throughout. It is served by eight (8) railway tracks, four (4) of which run along the shipping floors inside of the warehouses. This Company has also equipment for trucking and connecting with Ocean Shipping.

The total refrigerated storage space is about 1,000,000 cubic feet, which is subdivided into "Cooler" and "Freezer" Chambers. In a large portion of the Freezer Storage, temperatures as low as -15 degrees Far. can be maintained. The refrigerated storage provides facilities and conditions suitable for all classes of perishable goods as, eggs, vegetables, cheese, butter, meats and fish. The plant has special pre-cooling chambers in which apples, other fruit and similar commodities can be pre-cooled before shipping.



Large areas are available on the Shipping Floors for packing, sorting and special services.

One of the most modern and extensive plants yet installed for the processing and brine freezing of fish is provided. This plant operates at a temperature of minus 40 degrees Far.

In addition to the refrigerated facilities, large spaces are available for dry storage, bonded storage and frost-proof storage.

It was the intention of this Company to provide a wharf at its water lot above referred to and that this wharf in conjunction with the existing quay at the west end of the Basin should be used for the landing of trawlers and other fishing vessels. It was hoped by the promoters that the future development of the fishing business at Halifax would center at these wharves and that as this business grew, a complete pier would be built for the purpose of receiving and handling fish.

A modern ice making and storage plant form part of the facilities, installed with the object of providing trawlers and other fishing boats.

Owing to disappointments in respect of the development of the Trawler Fishing Business, a considerable portion of this Plant has not been used for some time and if these conditions continue, it may become advisable for the Harbour Commission to take over the Plant.

Modern cold-storage accommodation and pre-cooling facilities are essential to the Port and it was one of the recommendations of the Duncan Commission that such should be provided.

This plant is most advantageously situated for Port use and a considerable amount of overhead could be saved if it were operated directly by the Harbour Commissioners.

#### CONNECTIONS TO AIR PORT

The Halifax Air Port which is entirely modern and well equipped is located about three (3) miles from the Passenger Landing Quay at the Ocean Terminals. Direct Motor car connections over paved streets are available between the Quay and the Air Port.



### COAL BUNKERING:

The Coal Dock at Berth No. 26, operated by the Dominion Steel & Coal Corp'n, Limited, is equipped with two Mead-Morrison Coaling Towers. When both the Towers are in operation a 7,000 ton Collier can be discharged in about 24 working hours.

As regards bunkering steamers, each Tower has a maximum capacity of 300 gross tons per hour.

In addition to the Coaling Towers, there are three Coaling Barges as follows:

No. 1 - Capacity 900 gross tons equipped with Elevator Buckets with a maximum bunkering capacity of 150 gross tons per hour.

No. 2 - Capacity 900 gross tons equipped with Brown Hoist and Grab Bucket with maximum bunkering capacity of 100 tons per hour.

No. 3 - Capacity 300 gross tons, equipped with McMyler Crane and Grab Bucket with a maximum bunkering capacity of 75 gross tons per hour.

On the space at present occupied at Berth No. 26, an average stock of about 10,000 gross tons is carried and if necessary a stock to about 18,000 gross tons can be carried.

In addition to the above there is a coaling plant at Richmond Terminals with a capacity of 100 tons per hour.

### oil BUNKERING:

The Imperial Oil Company at Imperoyal, on the Dartmouth side of the Harbour opposite the Ocean Terminals, has the largest oil refinery in Canada, which covers 530 acres of land. Oil tankers discharge crude oil at the Company's piers directly to the Refinery. At these Piers, which have a depth of water of about 37 feet, fuel oil can be supplied to ships at the rate of 5,000 barrels an hour. Storage Capacity 10,500,000 gallons.

The Oil Company also has an oil boat available for bunkering ships in any part of the Harbour.



FLOATING CRANE "LORD KITCHENER": has a maximum capacity of 100 tons and is available for heavy lifting service at any point in the Port. It is owned by the Halifax Shipyards Ltd. The charges are \$50.00 per hour, plus towage and \$10.00 extra per hour for overtime.

GRAVING DOCK, SHIP-BUILDING & REPAIR PLANTS:

The Halifax Shipyards Limited (Halifax Plant) which is located along the Harbour front extending southwards from Richmond Terminals for a distance of about 3300' to the north boundary of H. M. Dockyards, have important and well-known dry-docking, ship-building and repair facilities as follows:

(a) Graving Dock

Dimensions: - Overall length 569 feet, - which can be increased to 588 feet by moving the gate to an outside position. Entrance width 89' 3", inside width 102' 6". Draught of water at high tide, over keel blocks, 27' 0", over sill 30' 0". This dock is equipped with dock side cranes and all the usual facilities for repair work.

(b) Ship-building Berths:

Four ship-building berths each 615' long by 60' wide equipped with revolving derricks.

(c) Buildings:

Machine Shop - Fire-proof, reinforced concrete building, one storey about 36 feet high, 280 feet long, 100 feet wide, with electric travelling overhead crane and all necessary machinery for all kinds of machinery repairs.

Plate Shop - A fire-proof brick building 600 feet long, 75 feet wide, 60 feet high, with two electric travelling overhead cranes, and all necessary machinery for the fabrication of steel for steel construction and ship repair. Above this building is located the mould loft, which is 500 feet long and 75 feet wide.

Power - Electric current for power purposes is supplied by the Nova Scotia Light and Power Company.

Pump House - Brick construction 40 feet by 24 feet, in which is installed pumps for pumping out the dry-dock.



Offices and Stores - Fire-proof and reinforced concrete and brick, 285 feet by 50 feet in width, 60 feet of which is four stories high and the remainder three stories.

(d) Fire Protection:

Supplied by an 8-inch sprinkler system installed throughout all the buildings.

(e) Travelling Cranes, Etc. and dinky locomotive for the movement of material.

(f) Motor Vessel "Erg" - Self propelling, with a 75 Horse-Power Fairbanks-Morse engine, with electric welding unit, compressed air unit and lighting sets.

(g) Marine Railway

On the Dartmouth side of the Harbour this Company have a Marine Railway and facilities for repairs of schooners and tug boats. At this plant there are four railways and six cradles available. The cradles vary in length from 80' to 275' in depth forward from 13' to 19' and in depth aft from 14' to 18' all over keel blocks at high water level. This sub-division of the plant has a Machine Shop and Plate Shop with the necessary machinery and tools for repairs and a travelling crane of 10-ton capacity. The largest cradle has a maximum lifting capacity of 2500 tons.

TOWAGE

The following is a list of tow-boats. They are owned by the Halifax Tow Boat Company;:-

Name	Gross Tons	Dimension - Feet	Registered Horse Power
		Length Breadth Depth	
"Coalopolis"	175	94.7	23.1
"Ocean Osprey"	117	87.9	21.2
"Samson"	111	83.0	20.5
"G. S. Mayes"	110	79.6	19.8
"Togo"	97	79.5	19.2
<u>Other Boats</u>			
"O'Leary Lee"	76	77.4	17.4
"Defiance"	38	64.7	13.7
			6.9
			6.5
			16
			14



## LIGHTERAGE:

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Owing to the circumstances that the Terminal Sub-Divisions of the Port are served by a unified Railway System, there has been very little call for Lighterage service at the Port of Halifax.

Privately owned and operated Lighters and Barges, however, are available when required and charges are open to negotiation with the parties owning and operating.

## BALLAST:

Salt Water Ballast can be obtained in unlimited quantities free of charge. If desired clean stone or gravel ballast may be obtained at moderate prices depending upon quantity required and other conditions.

## CARTAGE AND DRAYAGE:

This service is performed by several Cartage Companies operating at the Port of Halifax. Either horse-drawn or self-propelled vehicles are available.

A wide range of different types of conveyances is available up to and including heavy weights of 6 tons or 12,000 lbs.

## SALVAGE EQUIPMENT

The S.S. "Reindeer" a composite built vessel of 534 tons, length 180', beam 32' moulded depth 16', owned by the Halifax Shipyards Limited, is available for salvage work. This ship was specially constructed for oil, steam and electrically driven, - compressors, diving outfits, compressed air tools, complete machine shop, wireless equipment and all other devices necessary in salvage work.

For reference purposes in connection with this section, the following Drawings accompany this study:-

- No. 8-P8-9 - Pier No. 9 (Richmond)
- No. 8-D.W.T.-1 Property Deep Water Terminals
- No. 8-H O.T.-8 Property Plan - Ocean Terminals
- C.G.R. Halifax Ocean Terminals. Sheet No. 7  
Details of Wall Construction. Bulkhead Passenger Landing Quay.
- C.G.R. Halifax Ocean Terminals Sheet No. 8 Details of Wall Construction, Pier A.
- C.G.R. B-1-13-3-4 Transit Sheds Nos. 21 & 22. Main Sheds Typical Cross Section.
- C.N.R.16379-5 General Layout; Immigration Facilities  
Transit Sheds Nos. 21 & 22
- C.G.R.-D-4-67A General Section and Elevation  
Transit Sheds Nos. 23 & 24.
- 3-G-103 Site Plan. Grain Elevator and Galleries



## TRAFFIC USE OF EXISTING FACILITIES

### PIER NO. 9

This Pier is admirably situated for handling bulk traffic. At the present time, there is concentrated at this Pier, coal, fertilizer, cement, petroleum products and lumber for full cargo shipments. Also, the Pier is equipped with cattle sheds for handling large consignments of live-stock.

However, the space available for handling bulk cargo is limited and makes for expensive operation. In addition to the above mentioned traffic, this Pier is used for handling explosives and could be used for handling bulk ore, which is a potential traffic now in sight. However, this additional traffic will tax the existing facilities beyond capacity.

### DEEP WATER TERMINALS:

The Deep Water Terminals consist of Piers Nos. 2, 3 and 4 with two Berths at each Pier.

Pier No. 2 is operated largely as a berth for cargo vessels. As this is a double deck pier, a concerted effort is being made to use the upper storey of Pier No. 2 for full cargoes of storage potatoes now being handled. Inbound cargo, lumber from the Pacific Coast, general cargo from the U.K. and Continent and miscellaneous Coast-wise shipping is all being handled at this Pier.

Piers Nos. 3 and 4 are used for similar services without the element of storage cargo.

### OCEAN TERMINALS:

The Ocean Terminals consist of Transit Sheds Nos. 20, 21, 22, 23, 24, 25, 27 and 28.

Transit Sheds Nos. 20, 21 and 22 are held largely for ships using Halifax as a Port-of-Call with No. 23 as



an Emergency Shed in case it is required.

Transit Sheds Nos. 23 and 25 are normally operated for general cargo boats in the Coastwise service, Trans-Atlantic, West Indies Service and also Australian, South American and New Zealand services.

Transit Shed No. 24 is specially weather-proofed for handling perishable cargo. It came into operation about January 6th, 1931 and up to and including the middle of April was continuously in operation handling potato and turnip traffic, full cargo shipments to the West Indies, Cuba and United States Ports.

Transit Sheds Nos. 27 and 28 have been utilized for the concentration of Canadian National Steamships traffic. It consists of the West Indies Services and, if possible, other services operated by the Canadian National Steamships. When it is not possible to dock Canadian National Steamships boats at Transit Sheds No. 27 and 28, Nos. 23 and 25 are used. In some instances it has been necessary to use No. 21 or 22 owing to congestion. There is also the bulkhead at Shed No. 28 now being utilized for ships which are laid up for minor repairs.

#### GRAIN ELEVATOR

The Grain Elevator is used for handling export, import and Coastwise grain. It is fully equipped with cleaning and bagging equipment and the figured capacity would indicate that this Elevator could handle approximately 15 million bushels per year.



POR T DEVELOPMENT IN COURSE  
OF CONSTRUCTION

PIER "B"

The Contract was awarded on January 21st, 1930, for a new Pier located south of Pier "A" of the Ocean Terminals.

The Contract plans called for a Pier 1,250 feet long by 260 feet wide, consisting of quay walls of concrete crib construction with the space between filled with selected fill. For the outer portion of the Pier the cribs are to be seated on rubble mound foundations, which are in some cases about 30 feet in height. At the inside portions, the cribs are to be placed upon the rock bottom of the Harbour, dredged to the required depth. The basins at the north and south of the Pier are to be dredged to a depth of 35 feet below low water at their west or shore ends. The depth of water in the outer portions of these basins is much greater. The Pier when completed, will provide a berth 970 feet long at the north side with a minimum depth of 45 feet at low water, and a berth 280 feet long and 35 feet deep, and on the south side of the Pier, a berth about 760 feet long, 45 feet in depth and a berth about 490 feet long with 35 feet depth.

In addition to the Pier proper, an inner bulkhead quay wall composed of concrete cribs is to be built along the inner or western end of the basins, for a distance of 216 feet at the north and south sides of the Pier.

Sixteen (16) cribs 108 feet long by 52 feet wide and 53 feet deep are required for the 45 feet draught portions of the Pier; 2 cribs 75 feet long by 52 feet wide by 53 feet deep for the east end of the Pier. These cribs were completed during the summer and autumn of 1930 and to date six (6) of them have been placed in position in the south quay wall. Twelve (12) cribs, 108 feet long by 42 feet wide by 43 feet deep are required for the 35 foot draught portion of the Pier and for the inner bulkheads.



To date, (May 18th-1931) seven (7) of these Cribs have been completed.

All these cribs are of reinforced concrete construction plain round rods of "Rail Steel Quality" being used for the reinforcement.

Ciment Fondu manufactures and supplied by the LaFarge Aluminous Cement Company, Limited, of London, England, is being used for the concrete of these cribs. This cement is supplied to the Contractors by the Harbour Commissioners and was purchased directly by the Harbour Commissioners under contract entered into by them with the LaFarge Aluminous Cement Company.

The borrowed fill for this Pier is being obtained from the area of the Harbour Commissioners' property and C. N. R. property lying to the westward of the Pier. Excavation for this material is being carried out in such a way as to provide space for rail connections to the Pier from the C.N.R. near Young Avenue and also to provide space for storage tracks for this Pier.

The Contract work includes for fill up to the cone line level only and nothing for water and sewerage systems, or for roadways on Pier and extension of Marginal Roadway to Pier. Nothing is included for Transit Shed Foundations or for walls and fill to the first floor level of Sheds.

The railway trackage connections to this Pier, including the tracks on the Pier for future Transit Sheds, are to be supplied and placed by the Canadian National Railways.

Contract Plans and Specifications are appended as follows:

#### Ocean Terminals Unit "B"

1-PB-12	Site Plan
1-PB-13	Layout Plan
1-PB-14	Sounding and borings elevations.
1-PB-15A	Crib "A"
1-PB-16A	Crib "B"
1-PB-17A	Crib "C"



1-PB-18A	Crib "D"
1-PB-19	Corner Fender and Ladder Detail
1 PB-20	Proposed Pier B. Unit. Typical cross sections.
1-PB-21	Details of castings.
1-PB-22	Cross section (11 sheets)
Also Contract Specifications for Pier "B".	

The estimated final cost of the work called for under this Contract according to the Contract Plans and Specifications is \$4,535,110.00 in accordance with the schedule shown as follows:

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No	Description	Unit	Quantities for 260' wide	Work done to date	Rate \$	Total Amount of Estimate	Total value of work completed to April 30/31	Per Cent Completed
1	Class No. 1 Subaqueous Excavation	C.Y.	172400	139700	5.40	930,960.00	754,380.00	81.0
2	Class No. 2 Subaqueous Excavation, Dredging to 45' below L.W.O.S.T.	C.Y.	67600	35694	1.50	101,400.00	53,541.00	52.8
3	Class No. 2 Subaqueous Excavation Dredging to depth beyond 45' below L.W.O.S.T.	C.Y.	113250	108537	1.75	198,187.00	189,939.75	96.0
	Borrow for filling Rock	C.Y.	202000	130000	2.30	464,600.00	299,000.00	64.4
4	Borrow for filling other material than rock	C.Y.	63300	13132	.65	41,145.00	8,535.80	20.7
5	Rubble stone placed in Cribs foundation borrowed material	C.Y.	92000	81842	2.00	184,000.00	163,684.00	89.0
6	Crushed stone placed in crib foundations	C.Y.	14450	4368	4.00	57,800.00	17,472.00	30.2
7	Mass Concrete in Dock Superstructure	C.Y.	9580	Nil	8.00	76,640.00	-	-
8	Mass concrete subaqueous Reinforced concrete in cribs	C.Y.	Nil	Nil				
9	Plain bars for concrete reinforcement	Lbs	62900	47854	11.45	720,205.00	547,928.30	76.1
10		Lbs	12635000	9,407.395	0.0375	473,812.00	352,777.31	74.5
11	Stone protection in Benks - Protection of Crib Cushion	C.Y.	Nil	Nil	3.00	1,088.00	12,540.00	11.7
12	Filling in Cribs	C.Y.	214800	25080	.50	107,400.00		
13	Timber in Fenders	F.B.M.	3300	Nil	300.00	990.00		
14	Wrought Iron whenever required	Lbs	18140	Nil	.06			
15	Rails in Mooring Post	Lbs	2160	Nil	.02	43.00		
16	Cast Iron Pipe Class A water pipe in work	LF	52	Nil	10.00	520.00		
17	Handling, towing, placing and sinking cribs	Ea	30	6	- 1000.00	30,000.00	6,000.00	20.0
					45 -			



No Item	Description	Unit	Quantities for 260' wide	Work done to date	Rate \$	Total Amount of Estimate	Per Cent Completed	Total value of work completed to April 30/31
19	Storing, maintaining, concrete cribs	Ea.	30	6	500.00	15,000.00	3,000.00	20.00
20	Ladders in Work	Ea.	31	Nil	30.00	930.00		
21	Cast Iron Mooring Posts	Lbs	215000	Nil	.08	17,200.00		
22	Grading and preparing top of rubble foundation	S.Y.	26870	5320	.50	13,435.00		
23	Grading & preparing top of broken stone cushion of concrete cribs of Dock Walls	S.Y. Tons	20021 19000	4540 140485	.50 34.00	10,010.00 646,000.00	2,270.00 477,649.00	22.7 74.0
	TOTALS as per Contract -					4,091,365.00	2,891,377.16	70.7
	Estimated Additional Cost for Proposed Timber Facing of Quay " Additional Cost for Proposed 40' Increase in Pier " Stone Protection to Crib Cushions					35,342.50		
	Credit - Refund from C. N. R. for Excavation on their property :-					166,690.60		
	Excavation - Rock			97.020		<u>17,790.00</u>		
	" Other Material			11.875		<u>108.895.00</u>		
				108.895		<u>108.895.00</u>		
						<u>4,202,293.10</u>		
	Credit - Items on which reduction in expenditure can be made as outlined in subsequent pages are as follows:							
	By substituting Portland Cement for Cement Fondu in Cope Wall					48,000.		
	By modification in placing of cribs at South west corner					<u>20,000.</u>		
						<u>\$68,000.</u>		
	Contingencies about 5% Engineering and Inspection					<u>68,000.00</u>		
	Financial carrying charges during construction					<u>4,134,293.10</u>		
	Grand Total Including Modifications and Additions					<u>209,511.90</u>		
						<u>115,000.00</u>		
						<u>186,830.00</u>		
						<u>\$ 4,645,635.00</u>		



As shown in the preceding schedule the estimated value of the work done to April 30th, 1931 is \$2,891,377.16. In addition the contractor has filed claims for large amount on account of delays consequent upon lack of decisions from the Department and in connection with other matters.

Crib-making is now in progress at Eastern Passage and at the present rate of progress, should be completed before the end of June.

It is estimated that an additional shipment of about 1,800 tons of Ciment Fondu will complete the cribs and it is expected that this shipment will arrive early in June.

The excavation of the trackage area and the placing of the filling was discontinued at the end of February as there was no further space available for safe filling under the conditions as five (5) cribs only were placed and these on the south wall.

Depositing of rubble mound foundations on the east end of the Pier with a 260' width, was completed about April 24, 1931.

Crib No. R-6 was placed April 1st, 1931.

Under present conditions of the construction, there is no room for any further placing of dredged material for Pier filling.

The Contractors discontinued dredging on April 21, 1931 and obtained permission to send the Dredge "Manseau" off the job. It was understood that this Dredge was under lease and had to be returned to the St. Lawrence by the end of April.

On account of not receiving decision from the Department regarding the proposals made for the widening of the Pier, the Contractors were instructed about the first of December to discontinue work for



quay wall foundations for the north side of the Pier. Prior to this they had dredged the overburden preparatory to placing rubble mound foundations for the 45' draught portion of this wall.

On April 20th, 1931 in order to enable them to continue their operations at the rubble quarry at Purcell's Cove, they were given permission to proceed with the placing of rubble mound in the foundation trench for the north wall in accordance with the Contract Plans.

It was considered that if the Department decided in favor of the widening of the Pier, it would only be necessary to remove the overburden for an additional 40' along the north side of the existing trench and place the additional width of rubble and that the rubble placed on the south side in the existing trench would take the place of fill, which would have to be provided in any case, at little, if any, additional cost.

Proposed Modifications of Contract  
Lay-out and Details  
For Pier "B"

The present Chief Engineer reported in November last as follows:

Widening of the Pier:

The contract drawings call for a pier 260' wide and show only two tracks down the centre of same.

The Pier is 1250' long and is intended for four berth operation. It is therefore, essential that there should be four central tracks with cross-overs at mid-length of Pier, in order that cars can be shunted from the outer berths without interfering with cars at the inner berths. Further, it is advantageous, in fact often necessary, to be able to load into two lines of cars at the rear of a Transit Shed.

Operation at Halifax and other Ports has shown that a Transit Shed at least 90' wide is required.



It would be preferable to have sufficient room on the Pier for two 90' Sheds with six central tracks and a central roadway.

Print of Plan No. 1-PB-26 attached, indicates a tentative layout of tracks and sheds for the 300' width. A glance at this section will show that there is no room to spare with the 300' width.

An examination of the Location Plan for this Pier shows that the north wall as now located is 650' south of the north wall proposed for the future intermediate Pier between Pier "A" and Pier "B".

The south wall of Pier "B" is already fixed by cribs in place. If we assume a 300' width for the future Pier and make Pier "B" 300' wide by moving the north wall 40' northerly, there will be basin space of 320' between it and the future intermediate Pier, all as shown on Prints of Drawing No. 1-FB-12A. This would give a good workable layout.

The width of the dredged basins called for on the Contract Plans was 225'. This width, however, was changed by written order issued last winter, to 255' - hence, if the north wall is moved 40' further northwards, there will remain a dredged basin 215' wide in accordance with the present working. This would be a sufficient width for the berth at the inner end of the basin.

The Estimate previously given shows the additional cost of the proposed 40' extension of width. In making up this estimate all items therein were extended under Contract rates except that for filling and concrete in cribs.

Owing to the relatively high cost of filling as necessary under the present contract, it is suggested that the additional filling required in respect of the widening should be included in a future contract which it will be necessary to place, for the Transit Shed foundations, including filling up to floor level of sheds, also water piping, drains, and possibly the Transit Sheds proper.



The width as called for in the present contract, is inadequate for the proper operation of a Pier of this type. The additional cost of the proposed widening including the filling, will probably not be over 4% of the final cost of the Pier at the Contract width, and a much smaller percentage of the cost of the completed Pier including Shed Facilities.

Prints of Plans Nos. 1-PB-26, and 1-PB-12A appended.

PROPOSED MODIFICATION OF CONTRACT DETAILS  
REGARDING WIDTH OF RUBBLE BASE AND PROTECTION  
OF CUSHION COURSE:

The contract drawings show a rubble base for the Quay Walls with a berm or shoulder only 10' wide from the outside face of the cribs for the sides of Pier. These rubble bases are about 30' high in places and have to sustain a heavy vertical load from the cribs forming the quay walls and also an enormous horizontal pressure from the filling of the Pier. The foundation pressure at the toe of the crib may be upwards of  $4\frac{1}{4}$  tons per sq. ft.

It is to be further noted that the deepest portion of this crib is on the south side of the Pier near its outer end where it is subjected to possible effects from heavy swell running in past the breakwater.

The contract drawings call for a berm or shoulder 25' wide for the rubble base at the east end of the Pier. The base in this section is not so deep on the whole as that along the south side.

In the quay wall construction carried out in Halifax Harbour for the first unit of the Ocean Terminals, a shoulder or berm 20' wide was provided for the rubble base.

Having in mind the above considerations and the general practice which has obtained in work of a similar nature, it is recommended that this berm or shoulder be increased to a width of not less than 15' from the crib face at the minus 47\*foot level.

It is considered that the berm at end of Pier might be somewhat reduced thus counter-balancing to some extent, the increased costs required for the modifications suggested under this heading.



The detail as shown on the contract drawings in regard to the toe of the Cushion Course leaves a very vulnerable point in the construction. This Cushion Course is to be composed of a layer, 2 ft. thick, of  $2\frac{1}{2}$ " diameter crushed stone, and no protection whatever is provided to prevent this Cushion Course being washed or scoured away by sub-surface current, action of propellers, etc. The result of experience with crib work of somewhat similar construction showed that heavy concrete blocks placed to protect the cushion were washed away within a short time.

If this cushion should be scoured from under the toe of the crib, the quay wall would be subjected to almost certain danger of settling forward and perhaps ultimately collapsing.

On drawing No. 1-PB-20A, a print of which is attached, a proposed method of providing protection for this cushion is indicated.

It is suggested in the first place that the cribs in future should be set 1' 6" lower than contract drawings call for, i. e. the bottoms should be placed at elevation - 46.5. The toe of the cushion should be stopped at a point 4' in front of the crib face. The rubble stone should be carried up from the shoulder or outer edge of the berm to the face of the crib to provide a cover nearly 4' thick over the edge and top of the Cushion Course. This fillet of rubble at the lower corner of the crib would extend to an elevation of -40.5, but would not limit in any way the draught of the berth, as there would be sufficient radius, even on a ship drawing 45' of water, to clear this fillet.

Hence, instead of working to a 15' berm at the -47' level, it is proposed that a dimension of 17' should be used, for sides of Pier, at the -48.5' level, which is the top of the rubble as proposed; and that the corresponding dimension for east end of Pier should be 23'.

It is estimated that the additional cost of the changes suggested under this Heading would be \$17,790.00. Quantities for said alterations are included in Estimate submitted herewith.



These alterations are recommended as essential in the interests of the safety and future maintenance costs of the construction.

#### REINFORCEMENT FOR WALLS OF CRIBS:

For some reason which is not evident, no reinforcement is shown on the contract drawings for the external faces of the outer walls of the cribs, for the upper 8' of same.

Unequal settlement is liable to occur in the case of many of these cribs, owing to the fact that the depth of the rubble base will vary very considerably over the length of a crib. It may happen from this cause alone even if a perfect bearing were secured at the settling of a crib, that a great portion of the crib load may be taken by the central portion of its base, thus inducing heavy tension stresses in the upper edges of the walls. There is always the danger of a slight unevenness of bearing even at the time of setting, which is as likely as not to induce tension at the top of walls. In places, the variation in depth for this Pier is far greater than ordinarily met with in this type of construction and it might justifiably be argued that somewhat shorter cribs would have been better.

A large amount of money has been expended in connection with this design in the provision of Ciment Fondu with the object of securing, if possible, permanency for the concrete.

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Deterioration of reinforcement/concrete construction is generally caused by the disintegration of the concrete itself, or by the corrosion of the steel reinforcement, or both; and in the cases of failures or rapid deterioration of marine structures of reinforced concrete, the greater number have been on account of corrosion of the steel.

If the concrete cracks, the reinforcement will be subjected to the salt water or the salt moisture-laden air at the points of cracking. Corrosion of the steel will start at these points, the concrete will be split away and progressive deterioration of the structure will proceed from the locations of the cracks.

In the case of most structures, but particularly in the case of these cribs, the strength or permanency will be no greater than that of the weakest spot, i.e. the loci of cracks if they appear; hence, it is essential that every possible safeguard be provided to prevent cracking of the cribs.



It is also to be noted that if cracks should appear, - even hair cracks - at the top edges of the crib walls, they are very likely to proceed downwards progressively and open up farther in the course of time.

Further, the portion of these cribs which will be exposed between the tide range at the outer face will be subjected to a much greater degree to danger of disintegration and deterioration than any other part of the structure. In fact the problem of securing permanency for the concrete crib construction narrows down to a great extent to this exposed face above low water level. This face, according to the design, would also be subjected to the wear and impact resulting from fenders and it will also be exposed to variations of temperature, frost action, etc. hence, above all other parts of the crib, this face should be thoroughly reinforced to prevent cracking due to tension, temperature variation, shrinkage and all other possible effects.

According to the contract design the outer face of the cribs above low water level is to be backed and finished to cope level with a heavy mass concrete cope wall and expansion joints are called for in this wall at about 30-foot intervals. The front wall of the crib itself extends 108 feet without a joint, i.e. the length of the crib.

As the mass concrete wall will bond to the inside face and top edge of the crib wall and will, moreover, be interlocked by the cross walls of the crib, it will be impossible for the cope wall to move at the expansion joints without inducing serious cracks at the corresponding sections in the face wall of the crib. It is probable that the cope wall itself should be reinforced in order to prevent cracking within the crib length, but in any case, ample temperature steel should be inserted in the face walls of the cribs.

The 45-foot cribs have already been built, but it is recommended that in the case of the 35-foot cribs, which are still to be poured, that additional reinforcement be placed in the upper portions of the longitudinal walls in accordance with revised detail shown on Plan No. 1-PB-18B.

It is considered that the bars are too close together in the lower portions of the inside transverse walls and that a portion of this steel could be dispensed with by increasing the bar spacing.



The net additional amount of steel involved in this revision is very small.

FINISHING OF QUAY FACE:

A construction problem arises in connection with this Contract as follows:

The design calls for the walls of the cribs including the face wall, to be concreted to a height about 8 feet above low water level - this in order to provide sufficient height in the crib walls themselves to control sinking at high water level. In many previous crib designs which have been carried out, temporary timber coffer dams have been attached to the upper edges of the cribs to serve this purpose and in the majority of cases of crib work now in use, the cope wall has been placed, to extend down near the low water level. In this way, small variations from line or level in the setting of the cribs could be corrected by a slightly over-sailing cope wall. This over-sailing, or projecting quay face, is advantageous also in preventing ships from bumping the comparatively thin face walls of the cribs themselves.

In the case of this contract design, it was apparently assumed that the cribs could be set to perfect line in order to give a presentable quay face. Apart from appearance, if the cribs were set slightly out of line, the resulting projecting corners would be very bad on fenders from the maintenance standpoint; and in fact, the action of the fenders would soon grind away or break the portions of the crib walls so projecting, thus leading to disintegration of the concrete.

It is considered that it is impracticable to set cribs of this size and draught to an exact line and even if they could be so set, they would in the case of the rubble base foundation, very likely settle somewhat out of line. Quay wall construction on a rubble base such as called for in this contract should have some time to settle after filling and the placing of the backing before the finished quay face or cope wall is placed. The experience thus far with the cribs on this job indicates that they may move laterally several inches during this settling period.

On all these considerations, it will be necessary to adopt a modification of the contract design in respect of the quay face.

the following: -

A number of studies have been made and the general scheme and details as shown on Plan No. 1-PB-28 appear to be the most favorable. In this design it is proposed to use a timber face composed of Nova Scotia Oak, or other suitable timber, extending above high water. This oak face can be set to good line, even if the cribs very slightly, by trimming the wales. It will present a uniform and satisfactory appearance and will be somewhat elastic to the motion of ships. This timber should last a long period and when worn out or broken by accident, can be readily replaced and the permanent concrete construction of the quay wall itself will thus be protected from abrasion and sheltered to a considerable extent from the disintegrating action of waves, frost, etc.

In the cribs already set in this contract, too great a variation from line has obtained and it is proposed that the contractor should be charged for the additional cost of cutting the concrete or using larger wales as necessary to bring this portion into proper line. For the remainder of the work it is proposed that the contractor should be instructed that his cribs must be set closer to the required alignment and that the cost of any trimming of timber or cutting of concrete which may be necessary in order to bring the quay face to the required line will have to be borne by him.

The estimated cost for this timber facing for the quay is shown in detail on the Estimate submitted herewith and amounts to about \$36,000.

It will be noted that the drawing above referred to shows the rear surface of the cope wall carried down in a sloping line rather than the stepped construction called for in the contract; also that the thickness at the top is increased. A 3 $\frac{1}{2}$  foot thickness for a cope wall at a deep water quay for the largest ships, is unusually light. The yardage of concrete per foot run for the altered design as shown is practically the same as that for the contract design.

The modifications as shown on said Plan are recommended.

#### MODIFICATION AT SOUTHEAST CORNER:

On March 13th of this year, the Chief Engineer submitted a proposal to the Department of Marine with reference to a modification in the placing of the cribs at the southwest corner of the Pier, with an estimate of the saving which said modification would effect.



This modification was approved by the Department and the Contractors were instructed accordingly.  
THICKENING OF QUAY FACE AND STRENGTHENING OF CORNERS:

The present Chief Engineer has raised a question concerning the thickness of the crib walls on the exposed faces of the Pier having regard to Ocean shipping conditions to be provided for at this Port.

Under the contract design the quay face walls of cribs are 21 inches thick from the base to the top. From low water level to the top the quay is thickened and backed by a mass concrete cope wall. The cribs are to be filled with sand of a very fine silty variety, which is obtained from the bottom near the mouth of the Harbour by sand suckers and which is pumped into place in the cribs.

In the case of the design and construction of the original unit of the Ocean Terminals, a total thickness of 5' 4" of concrete was provided from the bottom of the quay wall to a point 1' below low water level. This thickness was made up of a face 8" thick of pre-cast reinforced concrete, a subaqueous concrete filling 4' thick backed by a second wall 8" thick of pre-cast reinforced concrete.

In addition there were solid concrete buttresses extending back a distance of 31' from the face of the quay wall, spaced 22' center to center. These buttresses had an effective thickness of about 6'. From a point 1' below low water level, a granite facing was carried up to cope level. This facing projected not less than 6" beyond the face of the quay wall. This granite facing was backed by a solid concrete cope wall, which extended down to and bonded with the solid concrete of the facing and of the buttresses as above described.

Moreover, the filling of the remaining pockets or chambers of the quay wall, was carried out with rubble.

In this design the concrete structure below low water level, where repairs on account of accidents would prove extremely expensive was protected in the first case by the overhanging granite quay face. Secondly, the whole face below low water level was of considerable mass. Even in case of accident, such as cutting of the heavy mass face of the quay wall, the rubble filling would not be seriously disturbed and the stability of the wall as a whole, or the filling behind it, would not be vitally endangered.



During the last season two accidents occurred at the Pier, within a few weeks of each other, which have demonstrated the advantages of the original design in these respects and have emphasized the possibilities of serious trouble occurring in connection with the quay wall construction as proposed for Pier "B".

In the first case, the S. S. "Aulania" accidentally struck the face wall of the Passenger Landing Quay at an angle of 45°. The impact was so great that the stem of the ship was bent over and the plates at the side of the stem fractured. In this case the granite was only slightly abraded and the stem of the ship did not come in contact with the underwater concrete construction of the quay wall at all.

In the second case, the S. S. "Andania" while leaving the Pier on a fine morning, through some accident, struck the face of the wall head on with her stem. In this case the granite facing was not injured but the stem of the boat was folded back for a distance of about 2' 6" from the water line up.

Below the granite, however, the stem of the boat was not folded back, but it cut into the concrete construction of the quay wall for a distance of about 16". This cut extended downwards a distance of about 7' from the bottom course of the granite.

It is intended to repair the damage to the concrete of the wall during the coming summer, in order to restore it to its original condition.

In the meantime, however, there is no danger to the quay wall or filling therein.

It is suggested that a solid concrete filling about 4 feet thick and extending from the bottom of the cope wall to a depth of about 12 feet below low water level might be placed along the inside of the quay face of the cribs. This concrete filling could be easily placed by stopping the sand fill at a point about 12 feet below low water level and pumping out the face packets of the crib at that level and placing standardized form panels and filling in the dry with a fairly lean mix of concrete.

It is estimated that about 5,200 cubic yards would be required for a concrete backing of this kind around the whole face of the Pier, including inner bulkhead walls.



There is some question as to the contract rate which would be applicable to this work - we assume the rate of \$8.00 per cubic yard as in item No. 8 of the contract schedule. The total net cost including cement (Portland) and crediting the sand fill eliminated, would be about \$11.00 per cubic yard, or the total cost would be about \$57,000.00.

On the other hand it might be argued that it would not be probable that ships would ram the sides of this Pier at any considerable angle owing to the comparatively narrow space in the side basins etc. There is no doubt when the future Piers are completed at the north and south sides of this Pier that the danger of direct ramming will be largely eliminated. For the present, however, it would be quite possible for ships to strike the outer or eastern half of the side walls, especially on the south side. Hence, it might be sufficient precaution to place concrete backing along the outer half only of the north and south walls.

In the case of the construction of the original unit at this terminus the outer corners of Pier "A" were filled solid with concrete, thus providing, in effect, a solid concrete wall from the base to the top, about 31 feet thick and extending around the corner for a distance of about 40 feet in each direction. This was a precaution in order to take care of the heavy impact and pressure to which the outer corners are frequently subjected in the course of ships warping in and out of their berths. It is recommended that the six corner pockets of the outer corner cribs should be filled with mass concrete from bottom to top.

This would require about 2,500 cubic yards and using the rate as estimated above of \$11.00, the cost would be about \$28,000.00

#### CIMENT FONDU IN COPE WALL:

According to the contract, it was intended to use Cement Fondu for the mass concrete cope wall, to be placed at the face of the Cribs. It is proposed, however, to make this wall of Portland Cement, as it is located practically altogether above tide level and could be poured in the dry and being of



heavy mass construction and easily repaired in the case of surface disintegration, it is not considered that the expenditure of an additional \$48,000 which would represent the excess cost of the Ciment Fondu for this portion of the work, is justified.

PIER NO. 5:

The Dominion Coal Company, Ltd. have occupied, with their coaling plant, Berth #26 at Pier "A" since the completion of the Ocean Terminals in 1918. During the early summer of 1930, arrangements were made whereby the Dominion Coal Company were to vacate Berth #26 and enter into a lease of a new Pier to be constructed at Deep Water Terminals, same to be known as Pier No. 5.

Accordingly, plans and specifications for the proposed Pier were prepared and a contract was entered into for the construction of this work. This Pier was to be about 627 feet long and 177 feet wide and to provide a berth on the south side, 582 feet long, with a minimum depth of 33 feet at low water. A barge berth about 200 feet long was to be provided on the north side of the Pier.

The work called for in this Contract consisted of the dredging of the berth on the south side of the Pier, the construction of a steel sheet piling retaining wall with concrete capping for the south side, east end, and barge berth on the north side of the Pier, a rock bank for the balance of the north side of the Pier and a fill of selected material. An inside footing carried on piling, for the Coaling Tower Rail was also to be provided.

In addition to the Contract, a water supply pipe was to be installed from the City system to serve this Pier. This work was ordered out as an extra under the Contract and was completed to the present shore line. The diversion of a City sewer was found to be necessary and carried out by direct labor under the Commission.



Upon investigating the condition of the work under this contract in November last, it was found that the footing trench for the steel piling on which the design essentially depended was not being attained in an effective way by the Contractors.

A study of the design revealed some other serious weaknesses. The broken stone embankment called for in the Contract Drawings along the outside of the sheet piling at the outer end of the Pier was found to be too narrow to effectually hold the steel sheet piling horizontally at a sufficiently high level to prevent undue stressing and consequent deflection of this piling from the pressure of the filling within the Pier.

Again, the timber piling called for to support the crane girders was some distance above the permanently wet line and would in consequence be subject to rapid decay.

Considering the rock bottom, and further the peculiarly stratified and friable nature of the rock in respect to trenching, it was considered that the steel sheet piling design was not at all suitable for this work.

Owing to the unsatisfactory condition of the work as outlined above, thirty days suspension, as provided for in the Contract, was given the Contractors on the 13th of November, 1930. During this 30-day period a number of studies were made with a view to finding a method under which the Contract would proceed to the completion of the work.

After conferences in detail with the Engineers of the Department in Ottawa, it was considered that if the Contractors would agree to certain modifications and proposals that the work might be completed at a cost which under the circumstances might be somewhat lower than that which could be expected if the Contract were cancelled, or other alternative courses adopted. The Contractors, however, failed to agree to these proposals and the work has, since, been at a standstill.



It is estimated that the cost of the work if completed in accordance with the present Contract with the necessary modification to secure stability would be about \$800,000.

It is to be noted that in addition to the work included in the original contract, that water and sewerage systems, light and power lines and connections, surfacing for coal pile and other items are necessary to complete the Pier for service and are included in above Estimate.

The late Administration, during the summer of 1930, that is, some time after the Contract was let, expressed themselves to the Coal Company, as willing to provide this additional work at the expense of the Harbour Commissioners.

It is to be noted that under the existing arrangement at Berth No. 26, Pier "A", which is a continuation of that previously made with the Canadian National Railways, the Coal Company pay an annual rental to the Harbour Commissioners of \$7,425. In addition, they pay dockage charges of 7¢ per ton on all coal handled ex-vessel onto the Berth.

In 1930 this totalled about \$7,900; or, their total payments amounted to \$15,325 about.

Under the agreement negotiated in 1930 by the late Commissioners (which was never actually signed) the Coal Company were to pay an annual rental amounting to 5% on \$400,000, i. e. \$20,000.

In addition they were to pay a charge of 10¢ per ton on the excess over 75,000 tons. On the basis of 1930 figures, this would amount to \$3,800, or a total of \$23,800.

The Coal Company are planning a large distribution of coal to the City of Halifax from their proposed new facilities and they estimate that they will within the next five years be handling 150,000 tons per annum.



On this basis the wharfage charge would amount to \$7,500; or a total of \$27,500 per annum.

Regarding this whole problem of coaling berth with its auxiliary facilities, there is no doubt that the existing position at Berth No. 26 at Pier "A" is disadvantageous from the following grounds:

The revenue obtained by the Commissioners is not commensurate with the value of the Berth.

The dust from coal handling is obnoxious in the main passenger handling area of the Port.

It does not lend itself to the development of the local distribution of coal to Halifax on account of the additional trucking distance, etc.

At the present time nearly all the Canadian Coal used in Halifax and vicinity is brought in by rail and the retail price is based on rail haulage from the Mines at Sydney, etc; consequently, the cost of coal to Halifax consumers is relatively high.

It is important to secure for Halifax the reduction of cost of coal which could be made by reason of water carriage and the use of a modern screening and retail plant in connection therewith.

At the proposed location at Pier No. 5, the Coal Company had the designs prepared for a plant for the handling of coal for the local markets and the location of this Pier at practically the center of the waterfront would minimize truckage delivery costs to the Halifax consumers. From this point of view, the location as proposed at Pier No. 5 would be most suitable.

The actual layout, however, on which the work at Pier No. 5 was started, is somewhat unfortunate. The line of the south wall was located about 340' from the south face of existing Pier No. 4. In the future development of the Deep Water Terminals (as discussed elsewhere in this Report) there is no doubt that Pier No. 4 should be lengthened and widened to the north in its future reconstruction. A breadth of about 200' would probably be about right for this Pier in future. This would leave a space of only 140' for a Basin between the north side of Pier No. 4 and the Coaling Berth



at Pier No. 5, which is altogether too narrow.

It is to be noted that the berthing requirements of Pier No. 5 for coal pier purposes will be fixed, not only by the length and draught of the largest coal carriers (which to date is about 425' long by 52' beam by 27' draught), but also by the length, beam and draught of ships which may desire to come to the Coaling Berth for bunkering.

Further, on the design of the Coaling Towers proposed, the receiving hopper projects about 7' beyond the cope line of the Pier, so that it is necessary to use pontoon fenders 7' to 8' wide between the quay face and the ship (either coal carrier or ship being bunkered).

It is evident from these considerations that the width of the dredged berth as proposed in the design of Pier No. 5, viz: 85', was quite inadequate to permit ships to enter and leave this Berth especially in the case of heavy winds.

In addition to the main Berth served by the Coaling Towers, the Coal Company required an auxiliary Berth for their coaling barges about 210' long by 23' to 25' draught. This Berth was proposed at the north end of Pier No. 5.

From the outer or east end of the Pier they proposed to carry on subsidiary coaling of small ships, such as tug boats, etc. by using hopper spouts.

The plant for the retail coal handling and distribution was to be located at the inner or west end of this Pier. The haulage would be probably across the Railway Tracks on C. N. R. property to the extension of Lower Water Street at the west side of the C. N. R. Freight Shed.

It was proposed to stock about 20,000 tons of coal along the center of the Pier. Two steel coaling towers were to be installed by the Coal Company.



It would seem that the solution of this problem under existing conditions reduces itself to the following:

(a) Authority should be given the Commissioners to amend the existing contract.

(b) A re-design of a Pier at site No. 5, taking advantage as far as possible of the work already done and the materials already delivered for which the Harbour Commissioners have to pay under the original contract.

It is to be borne in mind that an expenditure of over \$12,000 has been made for a sewer diversion in connection with this Pier and an expenditure of about \$5,000 on water pipe work in addition to the expenditure under the contract.

In this re-design the Pier should be moved to the north, if and as far as practicable without materially increasing the cost, in order to provide the maximum space for a future basin between this Pier and Pier No. 4.

(c) New tenders should be called for the completion of the work and it would be good practice to include additional dredging to widen the basin south of the Pier to the line proposed for the future reconstruction of Pier No. 7, if this work could be done more cheaply at this time under one contract and the spoil from the dredging could be utilized for the filling required in Pier No. 5.

A preliminary estimate for a timber pier with concrete cap wall 40' x 10' moved about 40 feet north of the present Contract location, gives a total cost of \$775,654.00 after absorption of costs of work done to date under existing contract and half the purchase price of the steel piles. This scheme is recommended.



An alternative location for a coaling berth could be just north of Pier No. 9 at Richmond Terminals. Construction at this site would be of the bulkhead and filling type. Timber crib bulkhead could be used and no dredging would be necessary. There is no doubt this site lends itself to the cheapest construction for coaling berth requirements. Necessary trackage could be run off from the C.N.R. Yards at this location.

The facilities could be increased by extending northwards if and when the business developed.

It is estimated that a coaling berth of the same capacity as that proposed at Pier No. 5 including water system, surfacing of coal pile area, engineering inspection and carrying charges during construction, would cost about \$560,000 at this site.

This construction, however, would not utilize the steel sheet piling and other materials already delivered.

If we add the amount of the expenditure incurred in connection with the present contract for Pier No. 5, viz: about \$286,000, the total would be \$846,000. As against this, we should probably credit say 50% of the amount paid for the steel piling, or, say \$50,000; leaving a net cost of \$796,000.

The dredging done at Pier 5 site which will cost about \$130,000 may have a future value.

From the point of view of bunkering ships or local distribution of coal this location at Richmond Terminals would not be so favorable as the one at Deep Water Terminals. It would involve additional distance of movement for shipping and considerably longer haulage for City distribution. The direct trackage entrance and exit from this site would have to be across the west area of Pier No. 9 property and along the east side of the Cattle Sheds; thence across the



Railway track and up a fairly steep graded ramp to Barrington Street. The roadway along the Cattle Shed is wide enough at present for only one-way traffic. It is evident that if a large truckage business develops at this site, it would be necessary to acquire more area from the Halifax Shipyards, or make other provision for widening this Road-way and including surfacing, etc.

Comparing the above alternative locations, it is evident that the amount of new expenditure required will be less for that at Deep Water and in view of the advantages of that site as explained above it is to be strongly recommended that the pier be built there.

It is important that necessary authorization should be given in time to enable the Coal Pier to be completed, the Coal Company to shift their plant from Berth 26, Pier A and finally the construction of a Transit Shed at Berth 26 in time for the 1932-33 shipping season.

The following list of drawings in connection with Pier No. 5 accompany this study:

No. 1-P5-16	Soundings and Borings
No. 1-P5-17	Plan - Sections & Elevation
No. 1-P5-18	Sections
No. 1-P5-19	Cross Sections - 3 sheets
No. 1-P5-21	Details
No. 1-P5-22	Corner Fender, Crane Rail Beam and Ladder Details

Copy of contract specification Pier No. 5.



WORK NECESSARY TO COMPLETE THE EXISTING  
FACILITIES AND THE WORK NOW UNDER  
CONTRACT

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The completion of the present facilities and amplification of the existing equipment as necessary to attain more economical operation, is the most urgent requirement of the Port.

DECEMBER 1930 PROGRAMME:

Under letter dated the 13th of December, 1930, a programme was submitted to the Department of Marine at Ottawa, which was made up of a number of items of supplementary work and equipment considered necessary to round out the existing facilities, as follows:-

Division No. 1 - Harbour Development in General

Sub-Division No. 7 - Construction Marginal Roadway at Deep Water Terminals 49,000.00

Sub-Division No. 8 - Participating in Construction Viaduct at Marginal Road, D. W. T. 40,000.00

Sub-Division No. 9 - Roadway Sidewalk, Parking space at O.T. 32,270.00

Sub-Division No. 10 - Removal of Temporary Buildings and completion of grading and surfacing at O. T. 7,000.00

Sub-Division No. 11 - Lighting system Marginal Raodway, O.T. 15,000.00 143,270.00

Division No. 2 - Piers, Wharves & Basins -

Sub-Division No. 6 - Reconditioning Pier No. 9 and construction of Dolphn 12,000.00

Sub-Division No. 7 - Reconstruction Pier No. 4 200,000.00

Sub-Division No. 8 - Reconditioning Pier No. 3 34,000.00

Sub-Division No. 9 - Construction New Pier No. 2 " 59,000.00



Sub-Division No. 10 - Reconstruction of Quay Face Platforms, Berths 23 and 24	-68
	12,269.62
	<u>317,269.62</u>

Division No. 4 - Plant and Facilities.

Sub-Division No. 3 - (Additional Estimate)  
Completion of Outdoor Electrical  
Sub-station

41,000.00

Sub-Division No.11 - Acquisition and enlarging of existing C. N. R. Boiler House and Plant at Pier No. 2

30,000.00

Sub-Division No.12 - Miscellaneous Items  
Plant and Equipment

43,250.00

Sub-Division No.16 - Completion Permanent  
Heating System at Ocean Tm's.

85,000.00

Sub-Division No.13 - Floating Crane

100,000.00

Sub-Division No.14 - Equipping of Traffic  
Department

5,000.00

Sub-Division No. 15 - Scow for Explosives

15,000.00

Sub-Division No.17 - Primary Cable Dis-  
tribution at Deep Water

6,000.00

ivision No. 6 - Grain Elevator System 325,250.00

Sub-Division No. 4 - Additional Trackage  
and car moving Facilities

18,000.00

Sub-Division No. 5 - Reconditioning equip-  
ment and elevator galleries  
including new ventilating system

26,000.00

Sub-Division No. 6 - Marine Leg

77,000.00 121,000.00

vision No. 7 - Permanent Sheds & Facilities

Sub-Division No. 1C - Reconditioning Shed  
at Pier No. 2

99,040.00

Sub-Division No. 9 - (Additional Estimate)  
Interior Partitions & Facilities  
to Shed No. 24.

1,740.00

Sub-Division No.10 - (Additional Estimate)  
Extension of Temperature re-  
gulated Storage Shed 27 & Shed 28.

10,000.00

Sub-Division No.11 - Reconditioning Cattle  
Shed at Pier No. 9

3,000.00



Sub-Division No. 12 - Freight Shed for Proposed Pier "A"	20,000.00	-69
Sub-Division No. 13 - Remodelling of administration building	6,000.00	
Sub-Division No. 14 - Service Buildings Construction	64,617.00	
Sub-Division No. 15 - Additional Offices, Gear Rooms, Rest Rooms, Sheds Nos. 23, 24, 27 and 28.	10,600.00	
Sub-Division No. 16 - Removal of Existing communicating Gallery 1st floor and erection on 2nd floor Shed No. 21	10,000.00	
Sub-Division No. 17 - Terminal warehouse for split shipments	225,000.00	
Sub-Division No. 18 - Shed on Pier No. 4	75,000.00	
Sub-Division No. 19 - Additional Shed Facilities on Pier No. 3	<u>3,000.00</u>	527,997.00
Emergency Fund	<u>50,000.00</u>	<u>50,000.00</u>
TOTAL		1,484,786.62

This programme has been restudied and on account of the urgent desire to keep down present expenditure a number of curtailments and modifications have been made in connection therewith.

The following programme has been put forward, of work which it is considered should be completed before the 1931-32 shipping season, the items which have been omitted from the original programme to be deferred to a later date:

<u>Division No. 1</u> - Harbour Development in General		
Sub-Division No. 7 - Lighting System Marginal Roadway, O.T.	<u>15,000.00</u>	15,000.00
<u>Division No. 3</u> - Piers, Wharves & Basins		
Sub-Division No. 6 - Reconditioning Pier No. 9 and construction of Dolphin	12,000.00	



Sub-Division No. 7 - Reconditioning Pier No. 3	<u>10,000.00</u>	-70	22,000.00
<u>Division No. 4 - Plant and Facilities</u>			
Sub-Division No. 11 - Scow for explosives	15,000.00		
Sub-Division No. 12 - Miscellaneous items Plant and Equipment	60,250.00		
Sub-Division No. 13 - Floating Crane	100,000.00		
Sub-Division No. 14 - Equipping of Traffic Department	5,000.00		
Sub-Division No. 15 - Fire Protection Installation Equipment	<u>17,800.00</u>	198,050.00	
<u>vision No. 6 - Grain Elevator System</u>			
Sub-Division No. 4 - Marine Leg	<u>100,000.00</u>	100,000.00	
<u>vision No. 7 - Permanent Sheds and Facilities</u>			
Sub-Division No. 1-(G) - Reconditioning Shed at Pier No. 2	99,000.00		
Sub-Division No. 11 - Reconditioning Cattle Shed at Pier No. 9	3,000.00		
Sub-Division No. 12 - Service Building Construction	42,000.00		
Sub-Division No. 13 - Additional Offices, Gear Rooms, Rest Rooms, Sheds Nos. 23,24, 27, 28	10,600.00		
Sub-Division No. 14 - Removal of existing communicating Gallery 1st floor and erection 2nd floor Shed No. 21	10,000.00		
Sub-Division No. 15 - Additional Shed Facilities on Pier No. 3	<u>3,000.00</u>	167,600.00	
Emergency Fund	50,000.00	<u>50,000.00</u>	
TOTAL		552,650.00	



Division No. 3.

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Sub-Division No. 7 - Reconditioning Pier  
No. 3, D. W. T.

This estimate for this work has been reduced from \$24,000 to \$10,000. In the original submission complete renewal of the fendering was proposed. It is now intended only to make repairs absolutely necessary.

Division No. 4.

Sub-Division No. 12 - Miscellaneous items Plant  
and Equipment.

The amount asked for has been increased from \$43,250.00 to \$60,250.00 to cover Air Compressor, 1½ ton Motor truck, additional dunnage, Platforms and Cargo trucks.

Division No. 4.

Sub-Division No. 15 - Fire Protection Installation  
Equipment.

This is a new item to meet the requirements of the Fire Underwriters Association.

Division No. 6.

Sub-Division No. 4 - Marine Leg.

The increase in amount asked for from \$77,000 to \$100,000 has been necessitated on account of the circumstance that further study indicated that the gallery accommodation for the in-coming belt would entail greater cost than the preliminary estimated provided.

Division No. 7.

Sub-Division No. 12 - Service Building Construction

On account of minimizing the Capital Expenditure under present conditions, it is proposed to put the service building in timber and semi-permanent construction, rather than concrete, permanent construction.

Particular attention is called to the importance of completing item 7-1-G. Reconditioning Shed No. 2 before the coming winter in order to safely take care of the storage requirements of important revenue producing Potato Traffic.



COMPLETION OF PIER "B" FOR SERVICE:

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As previously explained the existing contract for Pier "B" includes for the dredging, construction of the quay walls and the filling of the Pier to the level of the quay walls only.

Nothing is included for superstructure above that level or for foundations for Transit Sheds or for services, etc. To complete this Pier it will be necessary to place Transit Shed foundations, the necessary filling to bring the floor level of same 4' above quay level i.e. to rail level, the installation of necessary water and sewerage systems for the Pier itself and an extension from the City System to the Pier in the case of the water.

It will be necessary also to extend the Marginal Roadway from the head of Basin No. 2 to the new Pier.

Electric light and power lines will require to be extended.

Four Transit Sheds complete with entrance ramps, cargo doors, lighting system, fire protection installation and equipment, etc. will be required.

Necessary cargo handling equipment, such as Stevedores' Cargo Trucks, Cargo Scales, Cargo and Passenger Gangways, Tenders, etc. will be required.

Hot rooms, temperature-regulated space for cargo, gear rooms and heated office space will be required in the Transit Sheds with necessary heating installation and extension of the south Terminal's heating mains.

The railway trackage will be supplied and placed by the C. N. R.

The largest single item of cost in connection with this work will be the Transit Sheds. If two-storey Transit Sheds are put in at once, it will probably be necessary to place pile foundations to carry the heavy column and wall loads. The greater portion of the fill for this Pier will be of broken rock. This material makes pile driving difficult and expensive. On the other hand, it may be subject to slight settlement for some years. Experience in other parts of the Ocean Terminals has shown that after this material is in place for several years it will carry fairly heavy foundation loading without settlement.



To date two-storey Transit Sheds have not been used to any extent at the Port of Halifax. Sheds Nos. 21 and 22 were constructed as two-storey, but they have never been used as such in connection with cargo. The upper floor of Shed 21 was converted by the Canadian National Railways when the Harbour was under their management, to Immigration Quarters. The Upper floor of Shed 22 has also been practically converted to other purposes.

At Deep Water Terminals, there has been a two storey Shed, viz: that on Pier No. 2, for the last fifteen years or so. In the case of this Shed, however, the upper floor was used for Immigration facilities until about three years ago. Since that time it has been utilized for special storage facilities only (as was described in a former sub-division).

At the Port of Halifax, especially at the Ocean Terminals the railway trackage and yardage facilities serving the various berths are very complete and admit of rapid shunting of cargo in and out and with one line in front of the Sheds, and generally three at the back, transfer from Shed to rail or vice versa is rapidly effected.

Up to the present the average cargo tonnage per vessel at this Port has not been great and a considerable portion of the vessels, especially at the Ocean Terminals, have been port-of-call ships; consequently there has not been any trouble or congestion in handling both in and out cargo on single floor Sheds, nor has there been any delay of the ships at berth on account of this.

The first cost per square foot of quay space covered for a single-storey Shed is only about one-quarter that for a two-storey Shed.

Consideration of all the above factors indicates that the Transit Shed construction at Pier "B" should be of single-storey type and that these Sheds should be constructed as cheaply as possible as regards first cost, having regard to safety of cargo, etc. It is suggested that a temporary timber flooring and column foundations should be placed to serve until the fill reached permanent settlement, same to be replaced by concrete after the useful life of the timber is terminated. In the course of say, 20 or 25 years, if the development of business warrants, these Sheds could be replaced by two-storey sheds of a more permanent type of construction.

On this basis the additional expenditure required to complete Pier "B" for service is estimated at \$907,000.



The present contract for Pier "B" proper will not be completed until some time in 1932. An effort should be made to bring at least two of the Berths of this Pier into use for the shipping season of 1932-33. To this end contracts should be let; in say early Spring of 1932, for the construction of the Sheds, roadways and other services as outlined above, for this Pier.

#### Transit Shed for Berth No. 26:

As soon as coaling facilities are supplied elsewhere (as discussed under another sub-division) a Transit Shed with all auxiliary facilities and equipment should be supplied for Berth No. 26 of Pier "A".

This should be one of the most useful and valuable Berths in the present Port Facilities.

The remarks made above under Pier "B" with reference to the type of Transit Shed construction would apply here.

It is estimated that a single storey shed with permanent concrete foundations and floor, including services, etc. could be built for about \$200,000.

#### CONVERSION OF LOWER FLOOR OF PIER NO. 2 TO FROST-PROOF STORAGE:

As soon as additional berthing is available at the Ocean Terminals, say by the completion of Berths at Pier "B" and/or the liberation of Berth 26 to ordinary cargo traffic, the lower storey of Pier No. 2 should be converted into a frost-proof storage for the transit handling of the potato traffic. During the 1930-31 season over three-quarters of a million bushels of potatoes were handled through Shed No. 24 in transit shipment, in addition to the special storage at the upper floor of Pier No. 2.

Shed No. 24, however, proved itself too small for the economic handling of this traffic. Last season was the first for this business at this Port and with the natural increase to be expected, Shed No. 24 will be altogether inadequate for the future of this trade. Moreover, it is in the interests of shippers and the Port to concentrate both the transit and storage handling of potatoes at one Pier, if possible, as ships frequently desire to make up their cargo partly of seed potatoes from storage and partly with the table stock from the Transit House. The overhead cost of supervision, warehousing and other services performed by the Harbour Commissioners would also be reduced considerably if this traffic were under one roof.



It is, therefore, proposed to place inside frost-proof walls along the sides of the lower storey of the Transit Shed, these walls to be fitted with frost-proof doors. A trucking corridor would be left between this frost-proof wall and the existing outer walls of the Sheds with their cargo doors.

The railway entrances would be closed by suitable shutters. The cars could be run in to heated space on the inside tracks and discharged either to storage on the upper floor or for Transit only, on the lower floor. It is estimated that this work will cost \$80,000. It is expected that it will be very important from a traffic and reserve basis to have this facility available for the 1932-33 season.

#### SUBWAY AT SOUTH END OF BARRINGTON STREET:

When the plans were drawn for the trackage and general lay-out of the Ocean Terminals, provision was made for the placing of a subway to connect from the south end of Barrington Street to the Marginal Roadway at the west end of Pier "A".

When the Railways (then Canadian Government Railways) were completing the construction of the Ocean Terminals in 1918, tenders were called for the construction of this subway. Owing to the unsettled conditions at that time, however, incidental to the war period, this work was deferred.

During the intervening years, stevedores and workmen at Pier "A", Shed 24, etc. have been subjected to great inconvenience going to and leaving their work by having to travel around by the Marginal Roadway by Berths 22, 21 and 20 and back to the street car at Hollis or Barrington Streets. In practise they have generally been crossing the railway tracks (illegally) to the south end of Barrington Street and taking the street railway at the foot of Inglis Street.

Similarly, considerable extra distance and loss of time has been entailed with regard to trucking and all business connections at Pier "A" etc. by reason of having a loop down from Barrington or Hollis Streets by the Passenger Landing Quay and westward again to the head of Pier "A", etc.

With the completion of Pier "B" for service and conversion of Berth No. 26 to general cargo traffic, the amount of travel of both workmen and truckage to the south end of the Terminals should be at least doubled and the provision of a suitable subway or other means of access from the Street System to this portion of the Terminals can no longer be deferred.



Tenders were received in 1918 amounting to about \$150,000 for the construction of the subway as then planned. Since that time a considerable amount of filling has been placed at the northeast end of the Grain Elevators, and operating tracks, etc., has been increased - all of which would entail additional cost. Having regard to these changes in the conditions, it is estimated that this subway today would cost about \$250,000.

It is understood that the cost of this subway should be borne in great part by the Railways. The Harbour Commissioners, however, are sufficiently interested to participate in the cost in the interests of Port development.

The City of Halifax also should be interested to a certain extent in this development.

The apportionment of cost would be a matter for the Board of Railway Commissioners and a grant from the Railway Crossings Fund should be available for the work.

#### RAILWAY CONNECTION BETWEEN DEEP WATER TERMINALS AND OCEAN TERMINALS

At present the terminal switching and inter-switching rates at the Port of Halifax are higher than any other terminals operating in Canada on account of the long haulage necessitated.

The Main Terminals Yards of the Railways are located at Rockingham on the southwest shore of Bedford Basin. All movement from Deep Water Terminals to Ocean Terminals and vice versa has to be made through the Rockingham Yards. The Railway Company are complaining that even with the high rates charged, they are losing a great deal of money each year on Terminal operation at Halifax.

At the present time, the switch between Halifax Ocean Terminals and Deep Water Terminals involves a mileage of 8.65 miles. The switching charges involved are as follows:



CLASSES IN CENTS PER 100 POUNDS

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
14.5	11.5	10.0	9.0	7.5	7.5	5.5	5.5	-	5.5

(C.N.R. Tariff No. S-1)

With a direct rail connection between Deep Water Terminals and Ocean Terminals, the distance covered would be slightly over 1.0 miles which would make the switching charges as follows:

CLASSES IN CENTS PER 100 POUNDS

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
11.5	10.0	9.0	7.5	5.5	5.5	5.5	4.5	-	4.5

(C.N.R. Tariff No. S-1)

Therefore the saving would be:

CLASSES IN CENTS PER 100 POUNDS

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
3.0	1.5	1.0	1.5	2.0	2.0	-	1.0	-	1.0

The above are maximum rates to be charged and would not reflect special carlot switching rates which would go as low as 1.5¢ per 100 pounds.



The greater number of the private Piers or Wharves of the Port of Halifax are located between Deep Water Terminals and Ocean Terminals and are without direct rail connections, thus necessitating expensive cartage to and from the rail heads. A modern pier, such as that of Furness, Withy Company is used very little on account of the high costs of cartage to and from the railway. As a consequence the Berths of the Harbour Commissioners are congested at times with small vessels which would normally be handled at the private wharves if they had rail facilities.

The ultimate future development of this whole question is discussed elsewhere in this report.

It is submitted, however, that a railway connection should be provided in the very near future between Ocean Terminals and Deep Water Terminals and it is suggested that this could be carried out as a surface line along Lower Water Street, extending from the existing C. N. R. tracks at Deep Water Terminals and joining up with the existing trackage at Ocean Terminals at the rear of Shed 20, etc.

To make this connection it would only be necessary to leave the street twice; first, at the so-called "H.M. Ordinance Property" opposite Buckingham Street; and, secondly, through the Cunard Coal Company's property and around the east of the N. S. Light and Power Company's plant just north of the Passenger Landing Quay at the Ocean Terminals. It is suggested that the arrangement should be made with the Department of Defence for the taking over by the Harbour Commissioners of the H. M. Ordinance Property, as it is evident that this property is not of essential importance to the Department of Defence under present conditions.

The Cunard Coal Company's property would also have to be taken over either by purchase or expropriation.



With the operation of a single track connection to serve for some years to come, it is not anticipated that any very serious dislocation would be caused to the plant of the N. S. Light & Power Company.. Apparently, the moving of their coal bunkers with the necessary modification of their coal handling conveyers only, would be necessary.

. This proposal is shown on Plan No.G-HD-3 attached.

The idea is that this surface along Lower Water Street would be operated at night with necessary protection regarding street traffic,in accordance with the procedure which is used to a great extent along the waterfronts in New York and many other great Ports.

A total of about 1.2 miles of track would be required. The existing granite sets on this street could be removed and reset after the laying of the track at a comparatively small cost. The area of property which would have to be acquired at the south end would be 100,000 sq. ft. and a small lot about 4,500 sq. ft. in area which is at present used only for collecting metal scrap would have to be acquired at the north end. In addition, the Ordnance Yard (Department of National Defence) of 140,000 sq. ft. in area would be acquired at an intermediate point.

It is to be pointed out, of course, that this matter of extension of Railway Facilities is not primarily one for the Halifax Harbour Commissioners but should be carried out by the Canadian National Railways.

#### Terminal Warehouse:

Halifax, as yet, is largely a Port-of-Call for liner traffic. The West Indies traffic has developed into practically a retail distribution in quantities. The same applies to traffic moving on the Coastwise routes and to Newfoundland, St. Pierre, Miquelon, etc. During the past few years, the tendency in Railway equipment has been to build larger cars with greater minimum loadings. The Port of Halifax is, in a great many instances, a considerable distance away from the point of origin of the shipment. In order to obtain the benefit of the carload shipments to the Port of Halifax, shippers adopt the practice of moving forward to Seaboard a full carload of a commodity.

Only a portion of the car may be sold at the time of shipment. The balance will arrive in Halifax unsold. These goods must either stay in the cars under demurrage or rental or be placed in storage. At present, there is no storage facilities at the Port of Halifax except at the Pier Sheds.



This is not a suitable long-term storage for many classes of traffic and it does not make for efficient Shed operation when goods are stored in Sheds, primarily designed and actually used for transit traffic. Therefore, the Port of Halifax requires a large, modern Terminal Warehouse where the balance of a shipment can be entered into storage.

It is proposed that the property of the Department of National Defence, known as The Ordnance Yard, should be taken over by the Halifax Harbour Commissioners and that a terminal warehouse should be constructed on this property in connection with the inter-connection railway line on Lower Water Street, which is dealt with in last section of this report. As shown on plans Nos. G-HD-1 and G-HD-2, this location would be fairly central with respect to existing facilities at the Ocean Terminals, Deep Water Terminals, and Private Wharves. A single storey building about 300' X 160', as shown, would provide sufficient warehousing accommodation for some years to come.

A semi-permanent type of construction, equipped with Sprinkler System to minimize insurance costs, would be sufficient in the first instance. It would cost in the neighbourhood of \$175,000.

In connection with the future development of the whole area of the water front between Ocean Terminals and Deep Water Terminals, as subsequently discussed, this warehouse could be increased in capacity by extending to the south and also by converting into a multiple storey house, and it would then have the benefit of trackage at both sides.

With a development of the Dockyards area as a Commercial Wharf frontage and having in mind further development at Richmond Terminals, it is probable this site would be very near to the centroid of the traffic movement along the whole Harbour front.

With the completion of the Ocean Terminals to the South, a second terminal warehouse for split delivery and other miscellaneous storage would be conveniently placed just south of the present Cold Storage Plant. This site would allow of direct and ample trackage connections at both sides of the house and direct trucking from the Marginal Roadway. With the provision of a subway at the south end of Barrington Street, this house would be easily accessible by trucking to and from the business district.

The location of this house as a future development at this point would be particularly economical from the point of view of operation in the event of the present Cold Storage Plant passing into the hands of the Halifax Harbour Commissioners, as a single house staff could then operate both properties.



Remainder of December, 1930, Programme:

All the sub-divisions of the Programme submitted December, 1930, subject to such modifications as further study may develop, should be carried out without delay. Certain items should be put in hand and completed before Pier "B" is brought into service, e.g. the permanent heating installation for the Ocean Terminals, sub-division No. 16, Division No. 4, will be required in order to supply steam requirements to Pier "B".

Similarly the outdoor sub-station at Ocean Terminals should be completed in time to take the electrical services for Pier "B".

The Marginal Road for Deep Water Terminals should probably be completed in time to carry the new coal delivery traffic for Pier No. 5, if Pier No. 5 is to be completed at that Terminals.

Similarly the question of proceeding with an overhead viaduct connection to Gerrish Street should be considered in connection with the development of the coal traffic.

Quay Face Track for Passenger  
Landing Quay Piers 20, 21 and 22:

It will be of considerable advantage in the future to have a railway track along the quay face of the Transit Sheds at Berths Nos. 20, 21 and 22, in order to admit of handling heavy cargo between ship and rail without passage through the Transit Sheds.

With a railway extension along Lower Water Street to Deep Water Terminals, this track could be provided. Unfortunately, in the original construction of the Passenger Landing Quay the front platform was placed only 12 feet from the copy line. This does not admit of sufficient space for a track as there would not be room to handle mooring lines from the ships to the bollards outside the railway cars standing on the face track.

It would be necessary, therefore, to cut off the existing front wall of the platform and move it back a



distance of about 2 feet, narrowing the platform by that amount.

Harbour Bridge:

In the early years of the Intercolonial Railway operation to Halifax, railway connection was made with the Town of Dartmouth by a Branch Line which crossed the Narrows, so-called, between Richmond and Tufts Cove.

This bridge apparently was of combined railway and highway type and was of timber trestle construction for the greater part of its length with a steel swing span near the center. Apparently this Bridge was built of untreated timber and in the course of a few years the piles were eaten away by Marine Borers and decayed from other causes and the trestle was carried away.

Practically since the founding of Dartmouth and Halifax, an interconnecting ferry service has been carried on. In recent years during the summer months especially, with the increased use of the motor car, the ferry service has proven unsatisfactory and at times inadequate for the needs of the public.

A concerted effort was begun some years ago by the citizens of Halifax and Dartmouth to obtain a connecting bridge and considerable progress has been made, preliminary designs and estimates have been worked out by a firm of consulting bridge engineers, and a promotion company has been formed and certain arrangements entered into with the City of Halifax, <sup>x,</sup> Town of Dartmouth, Municipality of Halifax County and the Province of Nova Scotia, looking to the financing of this project.

The matter is now finally awaiting the decision of the Dominion Government regarding its participation in the guaranteeing of the interest on the proposed bond issue to cover the cost of the work.

This Bridge is planned to extend from Barrington Street at North Street on the Halifax side, to a point on Gyle Street between Windmill Road and Wyse Road on the Dartmouth side and is to be of high level construction giving a clearance 150' above high water.

It is to be for highway use only.

From the point of view of the Harbour Commissioners, it is essential in the interests of the development of



the Port of Halifax and also the subsidiary industrial development of the Halifax-Dartmouth District, that ample space for industrial sites should be made available. These sites should have good railways connections and Harbour frontage to allow the handling of raw and manufactured commodities between rail and shipping.

There is little or no space on the Halifax peninsula for such development.

On the Dartmouth side, however, there is ample space.

At present the Dartmouth site is served by a branch railway which leaves the main line of the C. N. R. at Windsor Junction and after looping around Waverly, proceeds along the Dartmouth shore line and thence eastward to Musquodoboit. This Branch Railway was constructed some year ago with the objective of reaching Guysboro and finally the Strait of Canso but at present it stops at Upper Musquodoboit. Only the most meagre branch line service is carried out on this line.

At the present time, the mileage from Imperoyal (Imperial Oil Plant) to the Ocean Terminal yards is 30.1 miles. The present charges for switching from Imperoyal to the Ocean Terminal yards would be as follows:

CLASSES IN CENTS PER 100 POUNDS

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
26.0	23.0	19.0	16.0	13.0	12.0	10.0	12.0	10.0	9.0

No minimum car load. (C.N.R. Tariff No. C-17)

If a bridge were constructed across the Narrows, the transfer from Imperoyal to the Ocean Terminal would follow the Bridge to Fairview Junction and thence to Halifax yards. The total distance would be approximately 11.0 miles as compared to 30.1 miles. This would bring the switching charges under the standard Tariff to the following rates:

CLASSES IN CENTS PER 100 POUNDS

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
20.0	17.0	15.0	12.0	10.0	9.0	7.0	8.0	3.0	6.0

(C.N.R. Tariff No. C-17)

If a bridge were constructed, plus the rail line connection direct between Deep Water Terminals and Ocean Terminals, the mileage from Imperoyal would be 6.1 miles. This would bring the inter switching rates down to:



CLASSES IN CENTS PER 100 POUNDS

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<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
14.5	11.5	10.0	9.0	7.5	7.5	5.5	5.5	-	5.5

(C.N.R. Tariff No. S-1)

On a switch between Imperoyal and Deep Water Terminals, the present mileage is 29.7 miles. The cost of switching would be as follows:

CLASSES IN CENTS PER 100 POUNDS

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
24.0	21.0	18.0	15.0	12.0	11.0	9.0	10.0	10.0	8.0

(C.N.R. Tariff No. S-1)

With a bridge constructed across the Narrows the distance would be 6.1 miles. The switching charges would be as follows:

CLASSES IN CENTS PER 100 POUNDS

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
14.5	11.5	10.0	9.0	7.5	7.5	5.5	5.5	-	5.5

(C.N.R. Tariff No. S-1)

On a switch from Imperoyal to Richmond Yards, the present mileage is 28.2 miles. The switching charges are as follows:

CLASSES IN CENTS PER 100 POUNDS

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
24.0	21.0	18.0	15.0	12.0	11.0	9.0	10.0	10.0	8.0

(C.N.R. Tariff No. S-1)

With a bridge constructed across the Narrows, the mileage would be 4.6 miles which would make the switching charges as follows:

CLASSES IN CENTS PER 100 POUNDS

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>	<u>7</u>	<u>8</u>	<u>9</u>	<u>10</u>
11.5	10.0	9.0	7.5	5.5	5.5	5.5	4.5	-	4.5

(C.N.R. Tariff No. S-1)

The above rates, while showing substantial savings, are all based on either standard mileage or local switching class



rates but the extent of saving in costs on local switching would all be reflected in specific charges for local switching of carload freight.

So far as railway operation is concerned, all traffic proceeding either to Halifax or Dartmouth is first sent into the Classification Yard at Rockingham along Bedford Basin; thence traffic for Dartmouth has to be switched back to Windsor Junction and around Waverly for a distance of 22.3 miles. The same procedure happens with westbound traffic originating at Dartmouth or beyond.

This operation in itself is a very wasteful one for the railway and is a great brake on industrial progress and development on the Dartmouth side, due to the very heavy interswitching charges.

It appears to the Halifax Harbour Commissioners that direct railway connection should be provided between Halifax and Dartmouth and the most suitable location is at the Narrows between Richmond Yard and the vicinity of Tufts Cove.

With a bridge across the Narrows, the passenger service now being operated on the Musquodoboit Branch of the Canadian National Railways would automatically come into Halifax Ocean Terminals; that is, instead of operating a passenger service to Dartmouth Station, the service would be operated to Halifax Deep Water Terminals or Ocean Terminals. This would provide for more efficient service on the Dartmouth Branch.

It would also do away with the necessity of maintaining Railway Terminals at Dartmouth.

If this connection were available traffic to Dartmouth and beyond on the Dartmouth Branch would be taken direct from the Rockingham Classification Yard by this crossing to Dartmouth or vice versa, so that the freight operation around by Waverly would be practically eliminated.

In this way two objectives would be served, viz: the making available for industrial development large areas on the Dartmouth side and the cutting of railway and other traffic-handling charges.

Convinced of the necessity of a railway bridge, it occurs to the Commissioners that the cost of same would not be very greatly increased if it were made a combined railway and highway bridge, and that the combined traffic requirements of the district are not sufficient at moment to warrant the construction of two separate bridges.



A highway crossing at the Narrows would mean a greater travel distance between the center of Dartmouth and the center of Halifax. In these days motor car operation, however, this small increase in distance would not be of great moment for ordinary passenger travel or light trucking. For heavy trucking the ferry service will probably be used to a great extent for many years to come.

The highway bridge as proposed at North Street is to be a toll bridge and considerable revenue is expected from through traffic proceeding from the west of Halifax to Truro, New Glasgow and other points to the east and north. The route by the Narrows would be fully as direct for this traffic. There would be, however a detour from Tufts Cove to Dartmouth in order to pick up the present Waverly Road.

If, however, the Narrows location were adopted, a connecting road could be built from Tufts Cove to the Waverly Road at the head of the first Dartmouth Lake or thereabout.

Preliminary studies for a combined railway and highway crossing have been made by the Commissioners' Staff, as shown on Prints of Drawings No. HB-1 attached. The highway would be carried from Barrington Street over the railway tracks at Richmond and at the Dartmouth side a scheme of grade separation between the highway and railway is indicated.

It is contemplated in this scheme that, when in future years the population of Halifax and Dartmouth require a separate and more central highway bridge, the highway deck should be removed from the Narrows Bridge and replaced by a second railway track which the growth of traffic at the Port of Halifax would probably then require.

It is to be assumed that the railways will find it to their advantage to participate in the cost of the construction and maintenance of a bridge at the Narrows as outlined.

Suitable space for factory sites would be available along extension of the railway line across the track to join the existing line to Waverley.

Marine Leg:

The additional equipment of a Marine Leg at the Elevator is of utmost importance. The movement of Argentine Corn into Canada is a traffic which appears to have developed with a degree of permanency.



In addition to this, there is an estimated movement of more than seven million bushels of flax and linseed meal being imported into Canada each year. The total movement of Argentine corn is approximately fifteen million bushels per year.

At the present time, the equipment for taking off bulk grain at Halifax is very antiquated. A test made on one ship (S.S. "CANADIAN PATHFINDER") during December 1930 showed that it took ten days to unload 100,000 bushels. The delay was partly due to weather conditions. The S. S. "CANADIAN SKIRMISHER" took twelve days to unload 300,000 bushels.

The costs worked out as follows:

- (1) Unloading - 2¢ per bushel.
- (2) Switching to Elevator - 3¢ per bushel.
- (3) Unloading into Elevator or Elevating - 1¢ per bushel.

Therefore, the total direct cost is approximately 6¢ per bushel, 11¢ per 100 lbs., or \$2.20 per ton of 2,000 lbs.

With a Marine Leg, this grain could be taken off the ship and transferred to the Elevator by conveyor belts at a total cost against the grain of 1¢ per bushel, 2¢ per 100 lbs., or 40¢ per ton, thereby affecting a terminal saving of \$1.80 per ton against the traffic.

With regard to delays to vessels. The total delay to the two ships above mentioned, as compared to the performance of a Marine Leg taking off 15,000 bushels per hour, would mean a saving of eighteen days demurrage. Demurrage charges are estimated on the type of ship handling this grain at \$250. per day. The total loss would be \$4,500. The total cost of the operation at the Port of Halifax on the S. S. "CANADIAN PATHFINDER" AND S.S. "CANADIAN SKIRMISHER", discharging 5,250 tons of grain, were as follows:

Against the cargo	-	\$9,450.
Demurrage	-	<u>4,500.</u>
Total		\$13,950. for unloading 210,000 bushels of grain.

The saving would be approximately \$12,000 on every 200,000 bushels of grain handled or \$70,000 to \$75,000 on each million bushels. The total quantity of Argentine corn which would be handled through Halifax would materially increase with the cutting down of costs against the cargo.

In addition to this, Halifax would be made an attractive Port for coarse grains from the head of the Lakes for distribution into the Interior.

The total handlings of Argentine Corn from January 1st to May 8th, through the Port of Halifax, amounted to 600,000



bushels. With a Marine Leg, approximately \$36,000 of direct and indirect cost could have been saved.

Floating Crane:

A floating crane is a piece of equipment which is urgently needed at the Port of Halifax.

At the present time, the Lord Kitchener is operated by the Halifax Shipyards. The charges for the use of this crane for heavy lifts are at the rate of \$50. per hour, plus \$10. per hour for Sunday time, plus tow boats as the Lord Kitchener is not self-propelled. No charges are made by the Halifax Shipyards, for the use of the Lord Kitchener, based on the weight of packages.

On a test made on lifts from the S. S. "AUSONIA" and S. S. "SCYTHIA" at Halifax February 15th, the total weights lifted were as follows:

33	10	10	9
.20	10	12	8
Total 112 tons.			

The total charge for the Lord Kitchener amounted to \$966.25. The average cost for the lift was \$8.63 per ton for crane service only. The additional labour cost of handling the heavy lifts was approximately \$4. per ton, making the total charge \$12.50 per ton.

The total revenue received on the above packages, in ocean freight, amounted to \$23. per ton. Therefore, approximately fifty percent (50%) of the gross revenue was absorbed in terminal charges.

Comparing this performance with the Port of Montreal, (By-Law No. 87 of the Montreal Harbour Commissioners).

The total charges for crane service for handling the same units as given above would be \$156. as compared to \$966.25 at the Port of Halifax.

Another instance was the performance of the S. S. "CEDRIC" on March 8th when a lift was made of several packages from 2 to 10 tons each. The total cost for the crane was \$510. The total revenue received, by way of ocean freight, was \$1,000 or fifty percent (50%) of the revenue was absorbed in terminal costs at the Port of Halifax.



## PROGRAMME OF FUTURE DEVELOPMENT

### Traffic Requirements

A programme for the future development of the Port of Halifax must necessarily be based upon traffic considerations.

In estimating the future trend of traffic at the Port of Halifax, the following factors should be taken into consideration:

- (1) Past performance of the Port.
- (2) Canadian Transportation Policy; i.e., the routing of Canadian Commerce through Canadian Ports.
- (3) The necessity for practically a duplication of Port facilities on the East Coast of Canada by reason of the St. Lawrence River being closed to navigation during the winter months.
- (4) The necessity for equipping Canadian Ports in order to compete with United States Ports for Canadian Traffic.
- (5) The probable effect of the Port of Halifax as a terminus of the Transcontinental Railway System recently developed.
- (6) The strategic position of the Port of Halifax in times of national necessity.
- (7) Halifax' position as a port-of-call.
- (8) Effect of the establishment of the Halifax Harbour Commission.



- (9) The ratio of import to export tonnage.
- (10) The development of a more regular flow of commerce through Canadian Ports.
- (11) Direct rail line connection between Deep Water and Ocean Terminals.
- (12) Railway rates to and from Halifax.
- (13) Entry of Canadian Pacific Railway.
- (14) Development of Coastwise traffic.
- (15) Halifax-Dartmouth Bridge.
- (16) Railway Port Competition - United States and Canada.
- (17) Availability of ballast cargo.

Dealing with the above outline in the order indicated:

(1) PAST PERFORMANCE OF THE PORT:

The following is a statement showing the average number of Seagoing vessels entered inward and outward at the Port of Halifax from 1881 to 1930 (50 years), fiscal years ending March 31st, averaged for 5-year periods.

<u>PERIOD</u> <u>5-YEAR AVERAGE</u>	<u>INWARD</u>	<u>OUTWARD</u>	<u>TOTAL</u>
1881-1885	990	1,126	2,116
1886-1890	1,003	1,244	2,247
1891-1895	983	1,216	2,199
1896-1900	1,012	1,076	2,088
1901-1905	1,105	1,129	2,235
1906-1910	1,030	1,002	2,032
1911-1915	1,129	1,182	2,312
1916-1920	1,257	1,470	2,726
1921-1925	1,053	1,218	2,271
1926-1930	1,535	1,712	3,247

(Compiled from Official Returns)  
(Department of Customs)



It will be noted from the above that the total number of Seagoing vessels which entered and departed at the Port of Halifax showed a very marked increase during the 5-year period 1926-1930 over previous 5-year periods. During the 5-year period 1926-1930, the highest number of Seagoing vessels entered inward and outward at the Port totalled 3,464 which was during the fiscal year 1925-1926 and the minimum number was during the fiscal year 1927-1928 and totalled 3,011 vessels.

The above figures deal only with the number of sea-going vessels entered inward and outward at the Port. To this must be added the total number of vessels entered inward and outward on the Coastwise service. Totals are not available prior to the fiscal year ending March 31st, 1917, but since then Official Returns give the following number of vessels in the Coastwise service arriving and departing at the Port of Halifax.

<u>YEAR</u>	<u>INWARD</u>	<u>OUTWARD</u>	<u>TOTAL</u>
<u>1917</u>			
Steamers & Motor Boats	1,268	1,258	2,526
Sailing Vessels	2,288	2,213	4,501
<b>TOTAL</b>	<b>3,556</b>	<b>3,471</b>	<b>7,027</b>
<u>1918</u>			
Steamers & Motor Boats	1,329	1,185	2,514
Sailing Vessels	1,805	1,673	3,478
<b>TOTAL</b>	<b>3,134</b>	<b>2,858</b>	<b>5,992</b>
<u>1919</u>			
Steamers & Motor Boats	1,218	1,138	2,356
Sailing Vessels	1,354	1,161	2,515
<b>TOTAL</b>	<b>2,572</b>	<b>2,299</b>	<b>4,871</b>
<u>1920</u>			
Steamers & Motor Boats	1,333	1,391	2,724
Sailing Vessels	1,191	950	2,141
<b>TOTAL</b>	<b>2,524</b>	<b>2,341</b>	<b>4,865</b>
<u>1921</u>			
Steamers & Motor Boats	1,609	1,642	3,251
Sailing Vessels	801	570	1,371
<b>TOTAL</b>	<b>2,410</b>	<b>2,212</b>	<b>4,622</b>
<u>1922</u>			
Steamers & Motor Boats	1,642	1,724	3,366
Sailing Vessels	816	556	1,372
<b>TOTAL</b>	<b>2,458</b>	<b>2,280</b>	<b>4,738</b>



<u>YEAR</u>		<u>INWARD</u>	<u>OUTWARD</u>	<u>TOTAL</u>
<u>1923</u>				
Steamers & Motor Boats				
Sailing Vessels		1,868	1,877	3,745
	TOTAL	743	550	1,293
		2,611	2,427	5,038
<u>1924</u>				
Steamers & Motor Boats				
Sailing Vessels		1,781	1,840	3,621
	TOTAL	668	428	1,096
		2,449	2,268	4,717
<u>1925</u>				
Steamers & Motor Boats				
Sailing Vessels		1,834	2,163	3,997
	TOTAL	579	340	919
		2,413	2,503	4,916
<u>1926</u>				
Steamers & Motor Boats				
Sailing Vessels		1,714	2,148	3,862
	TOTAL	607	316	923
		2,321	2,464	4,785
<u>1927</u>				
Steamers & Motor Boats				
Sailing Vessels		2,261	2,175	4,436
	TOTAL	802	393	1,195
		3,063	2,568	5,631
<u>1928</u>				
Steamers & Motor Boats				
Sailing Vessels		1,912	2,151	4,063
	TOTAL	381	194	575
		2,293	2,345	4,638
<u>1929</u>				
Steamers & Motor Boats				
Sailing Vessels		1,886	2,025	3,911
	TOTAL	380	118	498
		2,266	2,143	4,409
<u>1930</u>				
Steamers & Motor Boats				
Sailing Vessels		1,952	1,999	3,951
	TOTAL	357	91	448
		2,309	2,090	4,399
<u>5-YEAR AVERAGE</u>				
<u>1921-25</u>				
Steamers and Motor Boats				
5-YEAR AVERAGE		8,734	9,246	17,980
		1,747	1,849	3,596
Sailing Vessels				
5-YEAR AVERAGE		3,607	2,444	6,051
		721	489	1,210
GRAND TOTAL				
5-YEAR AVERAGE		12,341	11,690	24,031
		2,468	2,338	4,806



<u>YEAR</u>	<u>INWARD</u>	<u>OUTWARD</u>	<u>TOTAL</u>
<u>1926-30</u>			
Steamers and Motor Boats			
5-YEAR AVERAGE	9,725	10,498	20,223
	1,945	2,100	4,045
Sailing Vessels			
5-YEAR AVERAGE	2,527	1,112	3,639
	505	222	728
GRAND TOTAL			
5-YEAR AVERAGE	12,252	11,610	23,862
	2,450	2,322	4,772

The following conclusions are evident from the above figures:

(a) There is a marked decrease in the number of sailing vessels trading at the Port of Halifax in the Coastwise service, to be evidenced from the total of 2,288 sailing vessels entered inward in 1917 and 357 sailing vessels entered inward in 1930.

(b) This is compensated for by a marked increase in the number of Steamers and Motor Boats which increased from 1,268 entering inward in 1917 to 1,952 entering inward in 1930.

Comparing the 5-year averages (1921-25 and 1926-30), it will be noted that the number of Sailing vessels entered inward on the Coastwise service at the Port of Halifax for the 5-year period 1921-25 amounted to 721 vessels. During the succeeding 5-year period 1926-30 the number was reduced to 505 vessels.

This was compensated for by the increase in the number of Steamers and Motor Boats in the Coastwise service; namely, 1,747 during the 5-year period 1921-25 increased to 1,945 in the 5-year period 1926-30.

The total number of vessels trading inward and outward at the Port of Halifax for the past fourteen years is arrived at by adding the Seagoing Vessels with those employed in the Coastwise service. The results are as follows:

<u>YEAR</u>	<u>INWARD</u>	<u>OUTWARD</u>	<u>TOTAL</u>
<u>1917</u>			
Seagoing			
Coastwise	1,283	1,358	2,641
TOTAL	3,556	3,471	7,027
	4,839	4,829	9,668
<u>1918</u>			
Seagoing			
Coastwise	1,961	2,366	4,327
TOTAL	3,134	2,858	5,992
	5,995	5,224	10,319



<u>YEAR</u>		<u>INWARD</u>	<u>OUTWARD</u>	<u>TOTAL</u>
<u>1919</u>				
Seagoing		1,049	1,386	2,435
Coastwise		2,572	2,299	4,871
	<u>TOTAL</u>	<u>3,621</u>	<u>3,685</u>	<u>7,306</u>
<u>1920</u>				
Seagoing		980	1,150	2,130
Coastwise		2,524	2,341	4,865
	<u>TOTAL</u>	<u>3,504</u>	<u>3,491</u>	<u>6,995</u>
<u>1921</u>				
Seagoing		831	1,008	1,839
Coastwise		2,410	2,212	4,622
	<u>TOTAL</u>	<u>3,241</u>	<u>3,220</u>	<u>6,461</u>
<u>1922</u>				
Seagoing		864	1,017	1,881
Coastwise		2,458	2,280	4,738
	<u>TOTAL</u>	<u>3,322</u>	<u>3,297</u>	<u>6,619</u>
<u>1923</u>				
Seagoing		993	1,143	2,136
Coastwise		2,611	2,427	5,038
	<u>TOTAL</u>	<u>3,604</u>	<u>3,570</u>	<u>7,174</u>
<u>1924</u>				
Seagoing		1,192	1,356	2,548
Coastwise		2,449	2,268	4,717
	<u>TOTAL</u>	<u>3,641</u>	<u>3,624</u>	<u>7,265</u>
<u>1925</u>				
Seagoing		1,386	1,564	2,950
Coastwise		2,413	2,503	4,916
	<u>TOTAL</u>	<u>3,799</u>	<u>4,067</u>	<u>7,866</u>
<u>1926</u>				
Seagoing		1,649	1,815	3,464
Coastwise		2,321	2,464	4,785
	<u>TOTAL</u>	<u>3,970</u>	<u>4,279</u>	<u>8,249</u>
<u>1927</u>				
Seagoing		1,605	1,707	3,312
Coastwise		3,063	2,568	5,631
	<u>TOTAL</u>	<u>4,668</u>	<u>4,275</u>	<u>8,943</u>
<u>1928</u>				
Seagoing		1,427	1,584	3,011
Coastwise		2,293	2,345	4,638
	<u>TOTAL</u>	<u>3,720</u>	<u>3,929</u>	<u>7,649</u>



<u>YEAR</u>		<u>INWARD</u>	<u>OUTWARD</u>	<u>TOTAL</u>
<u>1929</u>				-95
Seagoing Coastwise		1,469	1,693	3,162
	TOTAL	2,266	2,143	4,409
		3,735	3,836	7,571
<u>1930</u>				
Seagoing Coastwise		1,525	1,760	3,285
	TOTAL	2,309	2,090	4,399
		3,834	3,850	7,684
<u>5-YEAR AVERAGES.</u>				
<u>1921-25</u>				
Seagoing Coastwise		5,266	6,088	11,354
	TOTAL	12,341	11,690	24,031
	AVERAGE	17,607	17,778	35,385
		3,521	3,556	7,077
<u>1926-30</u>				
Seagoing Coastwise		7,675	8,559	16,234
	TOTAL	12,252	11,610	23,862
	AVERAGE	19,927	20,169	40,096
		3,985	4,034	8,019

The following conclusions will be noted from the above statement:

(a) That, during the 5-year period 1926-30, 3,985 vessels reported inward at the Port of Halifax, an increase of 464 vessels or 13.2 percent over the average for the 5-year period 1921-25.

(b) That, during the 5-year period 1926-30, 4,034 vessels reported outward at the Port of Halifax, an increase of 478 vessels or 13.4 percent over the average for the 5-year period 1921-25.

(c) That, during the 5-year period 1926-30, 8,019 vessels reported inward and outward at the Port of Halifax, an increase of 942 vessels or 13.3 percent over the average for the 5-year period 1921-25.

While the above figures indicate that there has been an increase of approximately 12 percent in the number of vessels arriving and departing at the Port of Halifax, the above figures must be considered with the following modifications:



- (a) Changes in the type of vessels entering inward and outward.
- (b) Average cargoes handled by each vessel.

Dealing with (a), changes in the type of vessels. The following is a statement of the registered tonnage of Seagoing vessels entered inward and outward at the Port of Halifax for the past twenty-five years, averaged for 5-year periods:

<u>5-YEAR AVERAGE</u>	<u>NO. OF VESSELS</u>	<u>REGISTERED TONNAGE</u>	<u>AVERAGE PER VESSEL</u>
1906-10	2,032	1,987,153	977.8
1911-15	2,312	2,946,953	1,274.7
1916-20	2,726	5,412,078	1,985.1
1921-25	2,271	4,316,009	1,900.7
1926-30	3,247	7,697,657	2,124.5

It will be noted from the above figures that there has been a marked increase in the size of Seagoing vessels entering inward and outward at the Port of Halifax, increasing from an average of 977.8 tons to 2,124.5 tons during the twenty-five year period under review.

Dealing with (b), average cargo handled by the vessels. The following statement is indicative of the trend:

<u>5-YEAR AVERAGE</u>	<u>NO. OF VESSELS</u>	<u>CARGO TUNNAGE</u>	<u>AVERAGE PER VESSEL</u>
1906-10	2,032	560,566	275.9
1911-15	2,312	864,149	373.8
1916-20	2,726	1,181,703	433.5
1921-25	2,271	1,049,070	461.9
1926-30	3,247	1,262,604	386.4

The following conclusions are evident from the above figures:



(a) There has been an improvement in the average cargo handled by the vessels through the Port. During the 5 year period ending March 31st, 1910, the average cargo was 275.9. This increased during the 5-year period ending 1925 to 461.9 this figure being the maximum. For the 5-year period ending March 31st, 1930, the average is 386.4 tons cargo but the increase from the 5-year period ending 1910 as compared to the 5-year period ending 1930 is approximately 40 percent.

(b) In comparing Table No. 5 with Table No. 4, the increase in the average cargo handled is 40 percent while the increase in the average registered tonnage of vessels (977.8 tons to 2,124.3 tons) is 117.3 percent.

In considering the above comparisons it is necessary to view the same in the light of the position of the Port of Halifax being a port-of-call for vessel trading between New York, UKay and Continental Ports. Figures are not available and past records are not kept permitting of statistical dilution to indicate the number of vessels represented in the above figures which made Halifax a port-of-call but, it is evident that, the higher the ratio of vessels using Halifax as a port-of-call, the lower the average cargo will be.

Accurate returns for the quantity of cargo handled by vessels trading in the Coastwise service inward and outward at the Port of Halifax are not available, no records having been kept. However, Official Returns indicate the registered tonnage of Coastwise vessels entered inward and outward at the Port of Halifax for the fiscal years ending March 31st, 1917 to 1930 as follows:

YEAR	INWARD			OUTWARD			TOTAL		
	No. Vsls.	Reg. Tonnage	No. Vsls.	Reg. Tonnage	No. Vsls.	Reg. Tonnage	No. Vsls.	Reg. Tonnage	No. Vsls.
17									
Passenger & Motor Boats	1,268	537,360	1,253	422,950	3,536	959,818			
Other Vessels	2,298	155,205	2,313	164,333	4,501	319,553			
TOTAL	3,556	692,565	3,471	587,311	7,027	1279,376			
18									
Passenger & Motor Boats	1,329	858,157	1,185	440,773	2,514	1298,930			
Other Vessels	1,305	163,196	1,673	164,083	3,478	332,279			
TOTAL	3,134	1026,353	2,858	604,856	5,992	1331,209			
19									
Passenger & Motor Boats	1,218	783,205	1,138	321,407	2,356	1109,612			
Other Vessels	1,354	153,460	1,131	140,557	2,515	340,057			
TOTAL	2,572	941,665	2,299	462,004	4,371	1453,669			



<u>YEAR</u>	<u>INWARD</u>			<u>OUTWARD</u>			<u>TOTAL</u>		
	No. Vsls.	Reg. Tonnage	No. Vsls.	Reg. Tonnage	No. Vsls.	Reg. Tonnage	No. Vsls.	Reg. Tonnage	
<u>1920</u>									
Steamers & Mtr.Bts.	1,333	394,701	1,391	393,549	2,724	793,250			
Sailing Vessels	1,191	101,445	950	99,384	2,141	200,329			
TOTAL	2,524	496,146	2,341	497,933	4,365	994,079			
<u>1921</u>									
Steamers & Mtr.Bts.	1,609	487,053	1,642	315,396	3,251	802,449			
Sailing Vessels	801	107,563	570	90,615	1,371	193,183			
TOTAL	2,410	594,621	2,212	406,011	4,622	1000,632			
<u>1922</u>									
Steamers & Mtr.Bts.	1,642	523,955	1,724	324,151	3,366	848,106			
Sailing Vessels	816	55,160	556	53,321	1,372	108,481			
TOTAL	2,458	579,115	2,280	377,472	4,733	956,587			
<u>1923</u>									
Steamers & Mtr.Bts.	1,868	452,152	1,877	339,407	3,745	791,559			
Sailing Vessels	743	47,651	550	36,981	1,293	34,232			
TOTAL	2,611	499,803	2,427	376,383	5,033	875,191			
<u>1924</u>									
Steamers & Mtr.Bts.	1,781	399,965	1,840	374,046	3,621	774,011			
Sailing Vessels	568	46,139	423	34,595	1,096	80,734			
TOTAL	2,449	446,104	2,263	403,341	4,717	854,745			
<u>1925</u>									
Steamers & Mtr.Bts.	1,334	392,080	2,163	360,486	3,997	752,566			
Sailing Vessels	579	38,124	340	34,301	319	73,225			
TOTAL	2,413	430,604	2,503	395,287	4,316	825,791			
<u>1926</u>									
Steamers & Mtr.Bts.	1,714	367,562	2,143	423,533	3,662	796,195			
Sailing Vessels	607	37,092	316	22,813	923	59,705			
TOTAL	2,321	404,754	2,464	451,145	4,735	855,900			
<u>1927</u>									
Steamers & Mtr.Bts.	2,261	439,701	2,175	423,706	4,436	853,437			
Sailing Vessels	802	53,923	393	21,625	1,195	32,111			
TOTAL	3,063	493,624	2,568	452,711	5,331	845,305			
<u>1928</u>									
Steamers & Mtr.Bts.	1,912	495,900	2,151	431,636	4,063	814,533			
Sailing Vessels	381	29,240	194	23,997	575	53,245			
TOTAL	2,293	525,141	2,345	512,633	4,638	857,771			
<u>1929</u>									
Steamers & Mtr.Bts.	1,896	635,532	2,025	565,976	3,911	1201,508			
Sailing Vessels	30	31,240	111	17,250	111	31,500			
TOTAL	2,266	566,772	2,143	579,231	4,466	1243,000			



YEAR	INWARD			OUTWARD			TOTAL
	No. Vesls.	Reg. Tonnage	No. Vesls.	Reg. Tonnage	No. Vesls.	Reg. Tonnage	
1930							
Steamers & Mtr.Bts.	1,952	677,041	1,982	729,111	3,951	1,406,152	
Sailing Vescls.	357	18,424	81	10,578	448	28,002	
TOTALS	2,309	695,465	2,090	739,689	4,399	1,435,154	
5-YEAR AVERAGES							
1921-1925							
Steamers & Mtr. Bts.	8,734	2255,205	9,246	1713,486	17,980	3,968,591	
Sailing Vessels.	3,607	294,942	2,444	250,313	6,051	545,255	
TOTAL	12,341	2550,147	11,690	1933,799	24,031	4,513,346	
5-YEAR AVERAGE	2,468	510,030	2,338	392,760	4,806	902,789	
1926-1930							
Steamers & Mtr.Bts.	9,725	2615,836	10,498	2636,042	20,223	5,251,273	
Sailing Vessels.	2,527	139,927	1,112	99,343	3,639	269,270	
TOTAL	12,252	2785,763	11,610	2735,385	23,862	5,251,148	
5-YEAR AVERAGE	2,450	557,153	2,322	547,077	4,772	1,104,230	

The following conclusions are evident from the above table.

- (1) A marked decrease in the number of vessels entered inward and outward at the Port of Halifax since 1921. The average for the 5-year period 1921-25 was 4,806 vessels as compared with the average for the 5-year period 1926-30 of 4,772 vessels.
- (2) An increase in the registered tonnage of vessels entered inward and outward. For the 5-year period 1921-25 the average registered tonnage was 902,789 as compared with the 5-year period 1926-30 when the average registered tonnage was 1,104,230.
- (3) The average registered tonnage of vessels in the Coastwise service for the 5-year period 1921-25 was 188 tons as compared with 231 tons for the 5-year period 1926-30.

## (2) CANADIAN TRANSPORTATION POLICY:

During the past few years, there has been an added interest taken in Canada with the question of the development of an all Canadian route or the handling of Canada's foreign commerce via Canadian Ports. This has meant the creation of Port facilities beyond the immediate requirements or in advance of the traffic. Several means have been employed to develop this Policy; viz.,



- (a) Placing of Canadian Atlantic Ports on a competitive rail rate basis with United States Ports.
- (b) Proper Port facilities at Canadian Ports.
- (c) Customs regulations permitting a rebate of percentage of duties paid if goods are imported direct through Canadian Ports.
- (d) Consolidation of the Railway Systems in Canada into two Transcontinental Systems thereby creating a more powerful unit in attaining the above objective.

The above cannot be assessed accurately in projecting future requirements at the Port of Halifax but is a matter which should be considered.

(3) THE NECESSITY FOR PRACTICALLY A DUPLICATION OF PORT FACILITIES ON THE EAST COAST OF CANADA

In the problem of proper Port development, Canada is faced with a problem which is probably without parallel in that the facilities created on the St. Lawrence River are not available to handle commerce for about five months out of the year, thus diverting the traffic to Atlantic Ports. While there is a tendency for import and export traffic to drop off during the winter months, this is largely accounted for by two factors:

- (a) The concentration of import cargo at Montreal and St. Lawrence River Ports prior to the close of navigation because of the benefits received from the average rail haul from a central location.
- (b) The concentration of export cargo at Montreal and St. Lawrence River Ports during the winter months pending the opening of navigation because of the additional rail haul costs to Atlantic Ports.

The above tendency to concentrate traffic at St. Lawrence River Ports will possibly always be a factor to consider but, as the Atlantic Coast Ports are better known, this marked tendency will to some extent disappear.

(d) THE NECESSITY FOR EQUIPPING CANADIAN PORTS IN ORDER TO COMPETE WITH UNITED STATES PORTS:

This problem is more or less related to No.3 but is further superimposed upon the problem of Port development in Canada. Take for example the Port of Halifax which is a direct



competitor with the Port of New York. The Port of New York has the resources of the City of New York behind it with a population in the hinterland exceeding the entire population of the Dominion of Canada. The Annual Budget of the City of New York exceeds that of the Canadian Government. In addition to this, the United States War Department provides a further service by periodical and systematic surveys of United States Ports. The United States War Department is required by Law to assist the various Ports in the design and construction of modern Port Terminals of such a character as to handle the particular business of the Port in the most expeditious and economical manner. The United States Shipping Board, in its encouragement of an American-citizen merchant marine, can afford to overlook no detail which will contribute to the economy of ship operation, and the curtailment of the time spent by vessels in port is an important item in shipping economics. No such provision is made in Canada. The different Port Authorities (Harbour Commissions) are a likely responsible for the development of their respective Ports or Harbours.

It will, therefore, be seen that if shipping is to be directed to Canadian Ports in competition with United States Ports, Canada must be prepared to provide the latest and most modern Port equipment which, in a great many instances, must be in advance of the traffic requirements.

(5) THE PROBABLE EFFECT OF THE PORT OF HALIFAX AS A TERMINUS OF THE TRANSCONTINENTAL RAILWAY SYSTEM RECENTLY DEVELOPED:

For many years, the Port of Halifax was the terminus of the Intercolonial Railway. This line of Railway did not extend beyond Montreal. A further attempt to broaden direct Railway connection with the Port of Halifax was made when the National Transcontinental and Grand Trunk Pacific Railways were built. However, circumstances did not permit of this realignment of Railway lines to be tested as the bankruptcy of the Canadian Northern System and the Grand Trunk Railway System forced the Dominion Government to take over and operate these different lines of Railway which were consolidated within two years of the completion of the National Transcontinental into one system, thereby giving Halifax a direct Railway line connection with the major portion of Canada and tapping the Northern portion of the United States as far West as Chicago. The completion of this direct rail connection to all points in Canada needs only the entrance to and from the Port of Halifax of the Canadian Pacific Railway. Therefore, in short time (approximately ten years) in which Halifax has been directly connected with the larger portion of the producing territories in Canada must be considered when projecting the future. Further adjustments in



rail rates are necessary, also.

(6) THE STRATEGIC POSITION OF THE PORT OF HALIFAX IN TIMES OF NATIONAL NECESSITY:

In times of national necessity, the Port of Halifax is the most strategic Port on the Atlantic Coast or St. Lawrence River. The physical characteristics of the Harbour are such that ships of any size may enter. Bedford Basin provides safe anchorage for ships of war, etc. Without going into further detail, it will be appreciated that the facilities for handling vessels during such times of national necessity should be considered.

(7) HALIFAX'S POSITION AS A PORT-OF-CALL:

Halifax, as yet, is largely a Port-of-Call for Trans-Atlantic vessels. Ships on Port-of-Call do not take on their ballast cargo at the Port where they call, therefore, the ratio of berth operation or density is in a different ratio as compared to Ports where shipping Companies make their home Port. The same applies with respect to the quantity of cargo handled which is out of direct relationship to the facilities required in berthing ships. Until such time as the Port of Halifax is the home Port for vessels trading in the North Atlantic, the ratio of Port facilities to cargo will be out of alignment with other Ports.

(8) EFFECT OF THE ESTABLISHMENT OF THE HALIFAX HARBOUR COMMISSION:

The Halifax Harbour Commission was established in the Fall of 1928 and has been in operation approximately  $2\frac{1}{2}$  years. Up to this time, no concentrated effort was made to build or synchronize Terminals in such a way as to provide maximum efficiency or obtain traffic. The Port of Halifax is now in the position where several fairly important Terminal facilities are necessary to round out and step up the performance of the entire Terminal layout and reduce costs assessed either against the carrier or the shipper.

(9) THE RATIO OF IMPORT TO EXPORT TONNAGE:

Halifax is, at present, a Port largely handling package freight. For the five years average ending March 31st, 1927, the Port of Halifax handled, in Seagoing vessels, 528,129 tons of cargo inward and 576,004 tons of cargo outward per annum. During the same period, the Port of Saint John handled 503,086 tons of cargo inward and 990,519 tons of cargo outward per annum. The Port of Quebec handled 218,257 tons inward and 220,139 tons outward; the Port of Montreal handled 1,732,984 tons inward and 4,482,629 tons outward; the Port of Vancouver handled 978,423 tons inward.



and 2,293,513 tons outward, per annum. The ratio of export tonnage to import tonnage, therefore, is as follows:

Halifax .....	1	-	1
Saint John .....	2	-	1
Quebec .....	1	-	1
Montreal .....	2	$\frac{1}{2}$	- 1
Vancouver .....	1	$\frac{1}{2}$	- 1
All Canada .....	2	$\frac{1}{2}$	- 1

It will be noted that Montreal, Saint John and Vancouver show a fairly good ratio of outward to inward cargo as compared to all Canada. The Ports of Halifax and Quebec are below the all Canada ratio.

The reason for Quebec and Halifax being out of line is due to the fact that these Ports are largely Ports-of-Call. Taking the average for the 5-year period ending March 31st, 1930 the following table is of interest in indicating the average cargoes handled by Seagoing vessels at the different Ports enumerated below:

PORT	AVERAGE CARGO TONNAGE PER VESSEL		
	INWARD	OUTWARD	TOTAL
Halifax	470	315	389
Saint John	484	1,225	815
Quebec	715	1,297	933
Montreal	2,292	4,838	3,566
Vancouver	588	1,472	1,023
ALL CANADIAN PORTS	324	678	501

(10) THE DEVELOPMENT OF A MORE REGULAR FLOW OF COMMERCE THROUGH CANADIAN PORTS:

The future trends of traffic will undoubtedly lead towards a more even flow of import and export traffic through Canadian Ports. This must be considered in projecting the future.

(11) DIRECT RAIL LINE CONNECTION BETWEEN DEEP WATER AND OCEAN TERMINALS:

Direct rail connection between the Deep Water and the Ocean Terminals will provide for interswitching within the four mile limit prescribed under the Board of Railway Commissioners regulations. It will also permit of door deliveries



at Warehouses and eliminate a considerable amount of cartage.

A rail connection of this nature will relieve the Harbour Commissioners' Piers to some extent as the smaller ships now using the Harbour Commissioners' berths, by reason of the cost of cartage between privately-owned Piers and the rail head, would be able to dock at the privately-owned Piers and the cargo would be delivered direct from the Cars. This would relieve the Harbour Commissioners' Piers for larger vessels.

(12) RAILWAY RATES TO AND FROM HALIFAX:

With the inclusion of the Intercolonial Railway as part of the Canadian National system, considerable progress has been made in completing the basis of import and export rates to and from the Port of Halifax on the New York basis. While some rates are still out of line, particularly on fur-therance traffic to Newfoundland, etc., the reissue of Canadian National Railway Tarifre will largely rectify this. Other rate adjustments may have to be taken under review by the Board of Railway Commissioners.

A further matter of importance is the pro-rating of revenues via strategic gateways. The Canadian Pacific Railway, which does not enter the Port of Halifax over its own rails, has a pro-rate with the Canadian National Railway via Saint John, N.B., and/or St. Rosalie, P.Q. and other junction points on certain classes of traffic. The Canadian Pacific Railway also has an entry via the Saint John-Digby and Dominion Atlantic Railway route. The service via this route has been considerably improved.

(13) ENTRY OF CANADIAN PACIFIC RAILWAY:

This is bound to come as Halifax is the only Port to handle large ships and Halifax is the only important Port in Canada without direct Canadian Pacific Railway connection. This should provide turn-around service but the development at the Port will have to bear this important factor in mind and be prepared to meet the situation when it arises.

(14) DEVELOPMENT OF COASTWISE TRAFFIC:

Considerable development is possible in connection with the Coastwise traffic particularly that of the St. Lawrence River. This is brought about by the advance in rail rates making it possible for Coastwise Steamers to engage in the traffic. Further developments are possible by the landing of cargo at the Port of Halifax during the winter months to be transferred by vessels into the interior during the summer.



months. This phase of development is hardly exploited, as yet.

(15) HALIFAX-DARTMOUTH BRIDGE:

The effect of the construction of a bridge tying in the Dartmouth side of the Harbour with direct rail connection, which would permit of attractive switching charges, would be to relieve berthing space at the Harbour Commissioners' Piers where lighters are now being used for transferring outgoing cargo from the Dartmouth side of the Harbour. It will, also, considerably cut down the expense of handling cargo and permit of extension on the Dartmouth side of the Harbour in an industrial way.

(16) RAILWAY PORT COMPETITION - UNITED STATES & CANADA:

A situation which must be considered is the effect of Railway competition. Canadian Ports are served by one or two Transcontinental Railways; Halifax is served by one Railway directly. United States Ports are served by several Railways competing with other Railways serving other United States Ports. Operating conditions enter into this situation. Canada relies on shippers and Railways to provide an equal flow of tonnage as between Ports.

(17) AVAILABILITY OF BALLAST CARGO:

In order to properly round out the Port cargo tonnage, it is necessary to have available, at all times, a supply of revenue bearing ballast. This is particularly necessary if Halifax is to develop beyond the status of a Port-of-Call for Trans-Atlantic vessels. From Canadian Atlantic Ports, there is only one type of ballast available in any quantity; namely, grain.

The relative importance of Halifax as a grain shipping Port to date is as follows:

<u>CALENDAR YEAR</u>	<u>TOTAL NORTH AMERICAN SHIPMENTS</u>	<u>TOTAL PORT OF HALIFAX SHIPMENTS</u>
1924	508,717,164	Nil
1925	470,209,024	Nil
1926	481,795,335	1,010,173
1927	533,029,365	1,326,632
1928	534,286,172	2,576,777
1929	383,282,318	6,160,884
1930	279,415,622	224,229



The marked increase in shipments from the Port of Halifax during the year 1929 was due to an agreement entered into by the Halifax Harbour Commissioners with a grain shipping firm and the Elevator was utilized for blending Canadian and United States grain.

The present Elevator facilities can take care of approximately fifteen million bushels of grain per year.

Immediate steps are being taken to adjust inland rail rates in order that this grain may be made available at the Port of Halifax. In addition to this, a form of organization for the encouragement of the traffic is being contemplated which will place ship-owners and agents at Halifax in direct contact with the grain trade.

It will be noted from the preceding paragraphs that developments have taken place in the past few years which have resulted in Halifax becoming a more important unit in Canada's Transportation System and it would be a conservative estimate to state that the future development of traffic through the Port of Halifax would be, at least, on a comparative basis with the rest of Canada, both with respect to the number of sailings from the Port and the cargo tonnage handled.

With respect to the cargo tonnage handled by sea-going vessels at all Ports in Canada for the 5-year average periods 1911-15 to 1926-30, the following are the results (inward and outward):

1911-15	11,664,227 tons
1916-20	13,750,108 tons
1921-25	14,979,025 tons
1926-30	21,566,223 tons

PERCENT OF INCREASE

1926-30 over 1921-25	43.3%
1926-30 over 1916-20	56.9%
1926-30 over 1911-15	83.3%



It will be noted from the above that the greater increase came between the periods 1926-30 as compared to 1921-25 (seven million tons). The average increase for the past four 5-year periods shows an increase of 3,500,000 tons of cargo. Compared in the light of the performance for the past five years, it would be a conservative estimate to project the future traffic on an average of 3,500,000 tons for each five-year period. This would make the following results:

1926-30	22,000,000 tons
1931-35	25,500,000 tons
1936-40	29,000,000 tons
1941-45	32,500,000 tons
1946-50	36,000,000 tons
1951-55	39,500,000 tons

Relating this projected increase for all Canada to the Port of Halifax, the following results are obtained:

During the 5-year average period 1911-15, the Port of Halifax handled 864,149 tons of cargo as compared to 11,634,227 tons for all Canada or 7.4 percent.

period

During the 5-year average/1916-20 the Port of Halifax handled 1,130,703 tons of cargo as compared to 13,760,080 tons for all Canada or 8.6 percent.

During the 5-year average period 1921-25, the Port of Halifax handled 1,049,070 tons of cargo as compared to 14,879,025 tons for all Canada or 7.0 percent.

During the 5-year average period 1926-30, the Port of Halifax handled 1,262,604 tons of cargo as compared to 21,563,223 tons for all Canada or 5.9 percent.

The average for the four 5-year periods given above is 7.2 percent.

Therefore, a conservative estimate of the traffic per year for the five-year periods at the Port of Halifax would be 7.2% of the estimated tonnage for Canada for the corresponding period. Projecting this annual increase of cargo carried by Seagoing vessels would make the performance at the Port of Halifax as follows:

1926-30	1,580,000 tons
1931-35	1,830,000 tons
1936-40	2,090,000 tons
1941-45	2,330,000 tons
1946-50	2,600,000 tons
1950-55	2,840,000 tons



It will, therefore, be noted that this projected increase of cargo handled by Seagoing vessels, as conservatively estimated, gives an increase of 1,260,000 tons or approximately 100 percent during the next twenty-five years.

During the calendar year 1930, the Piers operated by the Halifax Harbour Commissioners show the following performance:

No. of Berth Days.....	5,840
No. of Berth Days Occupied.....	2,758
Percent of Occupation.....	45.51%
Highest percent of Occupation, Month of April.....	63.54%
Lowest percent of Occupation, Month of November.....	26.67%
High daily point of Occupation, Month of March.....	93.75%
Low daily point of Occupation, Months of July & September.....	6.25%

With the completion of Pier "B" Unit bringing four new berths into operation and the transfer of the Dominion Coal Company to a special Pier will create five additional berths for Seagoing vessels or an increase from 16 to 21 berths or 31.5 percent in berth accommodation. These additional berths should go into operation in the near future.

There is, therefore, an increase of 31.5 percent in berthing accommodation available at least within the next five years to take care of a projected increase in Seagoing traffic of approximately ten percent in cargo tonnage.

Based on the above figures, it would indicate that with the suggestions incorporated in the programme of Port development for rounding out the facilities and stepping up the performance of the present port facilities plus the completion of the Pier "B" Unit and the transfer of the Dominion Coal Company from Pier No. 26, the completion of the present facilities will provide sufficient berthing accommodation for some years to come.

As against this, the factors outlined in the preliminary remarks should indicate that the Port of Halifax could very materially exceed the projected increase indicated above. Further, no attempt has been made to project the increase in Coastwise traffic due to the lack of any information. The above figures and conclusions are all on what might be termed a very conservative basis and should be considered in conjunction with the fact that Halifax, as a Port, is at present more



or less in a state of re-organization.

A final consummation of several matters outlined in the preliminary remarks should create a situation where the increase in traffic will far exceed the projected estimates. Therefore, the matter requires careful attention and continuous study.

An alternative study of the probable future tonnage at Halifax based upon the foregoing traffic figures and taking into account the new factors expected to come into play, follows:

Diagram No. 1 attached shows a projected curve as based on the statistics above given for the Ocean Cargo Traffic of Canada up to the year 1960. Judging the future by the trend of the past, the tonnage at 1955 should be 40,000,000 per annum. This agrees with the figures as computed on page 107.

On Diagram No. 2 attached, a similar curve is projected for the Cargo Tonnage for the Port of Halifax for the same period. This curve is based on the performance of this Port from the year 1880 to 1930.

As was pointed out above, the tonnage at the Port of Halifax has averaged 7.2% of the total Canadian Port Tonnage for the period 1911 to 1930. If this percentage holds the Tonnage for 1955 would be 7.2% of 40,000,000, which would agree closely with the 2,800,000 shown on Diagram No. 2.

Considering, however, the effect of various factors as listed on Pages 89 and 90, which are now coming into play regarding the traffic at Halifax, or expected before 1955, it is reasonable to assume that the percentage of all Canadian Port Tonnage which will be handled by the Port of Halifax will progressively increase.

After a careful weighing of these factors in detail it is estimated that by the year 1955 this ratio may increase by a straight line variation to 14%. As thus calculated Halifax Tonnage in 1955 should be 5.6 millions per annum. - See Tabulation on Diagram No. 2.







It remains to relate this Tonnage Projection to the number of vessels and thence to Berthage requirements.

The average Ocean Tonnage for the Port during the five years 1926 to 1930, was 1,263,000. The number of vessels (in and out) was 3,280, which gave an average tonnage per vessel of 385. This figure is low, largely on account of the considerable percentage of Port-of-Call ships. It is reasonable to assumethat by 1955 (25 years hence) the average tonnage per vessel will have reached a more normal figure, of say 1,220. Moreover, the average size of ships will have increased.

The number of vessels (Ocean) using the Port in 1930 was 1640. If we assume an average of three days at Berth for each ship, we have a total of 4,920 Berth-days. The record shows that the Harbour Commissioners' Berths were occupied 2758 Berth-days during that year; hence 2,758 over 4,920 equals 56% of the vessels wēre docked at the Harbour Commissioners' Berths.

During this period the Commissioners had 16 Berths in use and the average percentage of occupancy was 45,41. It is reasonable to assume that in the future with the construction of additional Berths by the Harbour Commissioners, the increase in the size of vessels and other factors that the percentage of the Ocean Shipping to Berth at the Harbour Commissioners' Terminals will increase.

Assume a linear increase from 56% in 1930 to 76% in 1955.

On this basis the following table has been calculated.

YEAR	TONNAGE PER ANNUM	AVE.TON PER VESSEL	NO.OF VESSELS REG'D	% OF VESSELS AT H.C. BERTHS	NO.OF VESSELS AT H.C. BERTHS
1935	1,780,000	470	3800	58	2200
1940	2,480,000	620	4000	64	2550
1945	3,360,000	800	4200	68	2860
1950	4,420,000	1000	4400	72	3170
1955	5,600,000	1220	4600	76	3500







In 1930, the records show about 4,400 ships in and out; or 2,200 vessels. This number included steamships, motorboats and sailing ships. Judging from the records, this number of ships will probably not be greatly increased in the future but there will be an increase in the average size.

Assume these vessels average 2 days in Port:- equals 4,400 Berth-days per annum.

If uniformly distributed, 12 Berths would be continuously occupied. To allow for seasonal and other variations this number of Berths would probably require to be increased 100%, or 24 berths.

At present there are in Halifax about 43 Private Wharves and in Dartmouth, say about 7; a total of about 50.

In 1930, -44% of the Ocean Shipping was handled by these private wharves,- or a total of 720 vessels; equals an average of 2 per day, or to allow for variation, say 4 per day maximum. Allowing an average of 4 days at Berth, 16 Berths would be required. In addition, for the Coasting ships as above, 24 Berths would be required as a maximum; or a total of 40 berths maximum.

Many of the wharves and piers enumerated in the 50 given above, have only one side available for Berthage. The indications are that these private wharves at present are not used to their capacity.

With the extension of the Harbour Commissioners Terminals there will be a tendency for the larger Coasting Ships to use them instead of the private wharves.

If we conceive of the Terminals being ultimately extended to cover the whole of the present used Harbour Front of Halifax, manifestly all Ocean Shipping and also all Coastwise Shipping would have to be accommodated there unless alternative facilities were provided elsewhere.

As against this the growth of industrial plants on the Dartmouth side will probably divert a considerable amount of the Coastwise Shipping and also of the Ocean Vessels to the private berths at these points.



Under all these considerations it should be on the conservative side to estimate for increased berthage requirements as computed above for Ocean Shipping alone, and no doubt these requirements will be augmented to some extent by Coastwise Shipping.

It is felt that the Berthing requirements as above estimated will prove conservative assuming normal future conditions. The figures are given for the purposes of providing a tentative frame work for studies for a Program of Future Development, and moreover, it must be clearly recognized that elasticity will be a prime essential in connection with any Program that may be put forward so that development may be speeded up to keep in advance of traffic requirement or may be retarded or modified to conform with actual conditions as they unfold.

#### PROPOSED FUTURE DEVELOPMENT

In Halifax Harbour proper there are five sub-divisions to be considered for future development by the Harbour Commissioners, viz:

(a) Continuation southward of the Ocean Terminals lay-out.

There is space for a Pier 1250 feet long by about 300 feet wide between the present Pier "A" and Pier "B" so-called, now under construction. A core filling of heavy rock was placed for this Pier during the construction of the first unit of the Ocean Terminals (1914-18). As previously mentioned the Cold Storage Terminals Company have a lease right to the inner Berth on the north side of this Pier.

The dredging of the Basin between this Pier Site and the south side of Pier "A" was largely completed during the original construction. On account of this dredging work being done and the large quantity of core filling/<sup>1/2</sup> place, the cost of the completion of this Pier should be much less than the cost of Pier "B".

At least three Berths for the use of the Commissioners will be furnished by the building of this Pier and these would be fully sheltered berths.



As previously pointed out on account of the location of the Cold Storage Plant it would seem logical that the fishing business, which is, or should be, centered at the Port of Halifax, should be concentrated at this Pier and should within the near future possibly occupy the two north Berths of same. On the other hand the construction costs of a Pier in this location will be much greater than the requirements of Trawlers and other fishing craft would warrant.

There would still remain two full-sized berths on the south side for ordinary traffic.

Between Pier "B" so-called, and the Breakwater, there is a space for two additional four-berth Piers and it would be possible to secure two additional berths by the construction of a quay along the north side of the Breakwater. It might be pointed out here that it was the original idea in connection with these Terminals that a rock core should always be placed to the south of the last Pier built until the Breakwater is reached, in order to furnish a protection for the southerly berths during the infrequent occurrence of heavy winds from the south or southeast.

Pier "B" now being constructed will be without any such protection for the time being, and experience will show whether trouble will occur occasionally in berthing at the south side.

It has frequently been suggested that the Breakwater should be carried out a considerable distance further east in order to furnish greater protection to the berths at the Piers and Passenger Landing Quay, against rough weather due to southerly winds. As the depth of the water increases rapidly at the east end of this Breakwater, however, such an extension would be expensive.



(b) The Water-front between the Ocean Terminals and Deep Water Terminals:

This central stretch of the Harbour Front which is about 1 mile in length is now occupied by small timber wharves and jetties, the most of them old and in poor condition.

The total area east of Lower Water Street, including land and wharves is about 2,590,000 Sq. ft. or 60 acres. It is privately owned, excepting three lots which are Government Property.

In order to get an idea of the possible ultimate development along this stretch, the accompanying Plan No. G-HD-2 has been prepared. This Plan indicates the extension of the existing Bulkhead Landing Quay for a distance of about 2590 feet in a continuous line and after turning an angle, a further distance of about 1520 feet. The formation of the bottom is such along this stretch as to suit parallel Bulkhead Construction. Little or no dredging would be required and the amount of filling behind the Bulkhead would not be excessive.

For a distance between Deep Water Terminals and the Bulkhead extension above referred to, the formation would be suitable to the construction of Piers of about 700 to 750 feet in length, i.e. two-berth piers. At the north end of the Bulkhead extension, there would be a suitable place for a Ferry Slip.

A full system of railway running tracks and yard trackage could be provided between the two terminals. There is also a space at a central position for the location of a future Grain Elevator. With this lay-out, there could then be sufficient space between the trackage and a future widened and straightened Lower Water Street for Steamship Offices, modern business blocks, etc.



Perhaps the most formidable barrier against free development between the Ocean Terminals and Deep Water Terminals is the plant of the Nova Scotia Light and Power Company, located immediately north of the Ocean Terminals. Electric light and power for the City of Halifax and for Tramway operation, and also gas supply, is furnished from this power house and it forms the terminus of the Halifax Tramway System.

So far as electric and tramway services are required the plant might be moved to another part of the City without too great dislocation; rearrangement of the pipe distribution system for the gas supply however, might be a very costly matter.

On plan G-HD-2 a possible way out of this difficulty is indicated.

The suggestion is made that the Power House might be moved to the west to give sufficient space for yard trackage and through connections to the Ocean Terminals.

Between present berth No.20 and a future berth north of same, a considerable distance will be required for crossover railway tracks to the quay face for both berths. On account of these crossovers this space could not be usable for transit shed purposes, and hence, would not be of much use for berthing. It is suggested, therefore, that this space could be retained for the use of the coaling barges and coal carriers which supply the coal for the steam plant and gas works of the Power Company. It would then only be necessary to install overhead conveyors from the coal unloaders at the dock face to the Power House as indicated.

An objection to this arrangement would be the presence of coal dust at this central point of the Passenger handling portion of the Port. This, however, would be no worse than at present and possibly could be minimized by the installation of proper closed coal unloading and handling equipment.



(c) North of Pier No. 9 at Richmond Terminals there is a reach about three quarter mile long which could be economically developed for berthing by the construction of a quay line parallel with the shore and filling behind with a parallel extension of railway trackage

(d) Between Richmond Terminals and Deep Water Terminals is the property of the Halifax Shipyards, including the Graving Dock.

From the southern boundary of this property to the present north end of the Deep Water Terminals, the frontage is held (for a distance of over five-eighths of a mile by the Department of National Defence and occupied by the former Navy Dockyards. As the facilities and equipment at these Dockyards are all of a very ancient pattern, it will probably be only a few years until this whole situation will require to be brought up to date and it may well develop that a modern Naval Base to fill the Canadian requirements will be more advantageously constructed on the Dartmouth side.

Such a change would leave a fine stretch of Harbour Front open for development in the way of an extension northwards of the present Deep Water Terminals.

(e) In addition to the above, there is a reach about one quarter mile along the outer face of the Rockingham Classification Yards which would provide at comparatively low cost, berthing of medium draught for freighters, etc.

Operation here should be practically certain for nine to ten months of the year and with the service of an auxiliary ice-breaker as required, it will probably be carried on throughout the whole year.

Ultimate developments at these various sections of the Harbour front are indicated on print of Drawing G-HD-1, appended.

In addition to the above, on the Dartmouth side, there is space at Dartmouth Cove for a Pier and Quay Development as large as, or larger than the Ocean Terminals.

Considering the situation as a whole, however, it would appear advisable to confine the Port Development, insofar as the major ocean requirements are concerned in any case, to the Halifax side for many years to come. It will be in the interests of economy to concentrate this traffic as far as possible. The Dartmouth side should develop largely as an industrial area with individual private wharves etc. to serve the various industries.



Class of Berthage Required:

In the future development the following classes of accommodation will, inter alia, be required:

Berthage for Port-of-Call Ships: This berthage must be so situate as to minimize the total time required in the Harbour. A continuation northward of the present Passenger Landing Quay would be most ideal, but the outer Berths at Pier "A" or future Piers of the Ocean Terminals would serve.

Leased Berths or Piers: As pointed out previously, up to the present all Berths at the Harbour Commissioners' Terminals are nominally open to allocation to any Ship. In the future, however, conditions are likely to develop that Steamship Companies or other interests may desire to lease a Pier or group of Berths for their exclusive use. Piers, or even inside Berths of Piers at the Ocean Terminals, or Piers at Deep Water Terminals or south of same, would serve for these requirements. If the private wharves in the central sector are replaced by Harbour Commissioners' Quays or Piers, some of these owners will require leased berthage to replace their former accommodations.

Berthage and Accommodation for the Fishing Business, including the Fisheries Companies:

As previously pointed out it would appear that this should go to Pier "A" (between present Pier "A" and the Pier "B", so called, now under construction.)

Berthage for Coastwise Ships and the Smaller Sizes of Ocean Shipping:

If and when the central area becomes a part of the modern development of the Port, accommodation will be required there or elsewhere in the Harbour, for this class of shipping.

Probably a number of the Firms at present located along Lower Water Street, with wharf accommodation which is used to some extent in connection with their business, would transfer to the Dartmouth side. Without doubt, however, there will be a considerable requirement for cheap berthage of small to medium length and draft.

Open Berthage for Handling of Bulk Cargo: This could be provided most cheaply by an extension northward of Richmond Terminals or at Rickingham. Berthage at Rockingham would be more expensive to the Harbour Commissioners to operate as it would entail additional



General Construction Costs:

Based on the various types of construction now in use in the Harbour, the present costs of berthing, including Transit Sheds and grading for Rail-way connections, but exclusive of trackage, are approximately estimated as follows for the different sections of the Harbour Front:-

(1) Cost per 600' Berth at Pier "B"	\$1,405,000
Concrete cribs construction	
Cost per lineal foot of Berthage	\$2,250
(2) Cost per 600' Berth at Pier "C"	\$1,300,000
Based on concrete cribs construction	
Cost per lineal foot of Berthage	\$2,080
(3) Cost of Two inside 600' Berths of Pier "A1"	\$1,902,000
Based on concrete cribs construction	
Cost per lineal foot of Berthage	\$1,521
Cost of Two outside 600' Berths of Pier "A1"	\$2,283,000
Based on concrete cribs construction	
Cost per lineal of Berthage	\$1,828
(4) Cost per 600' Berths at Richmond Terminals	\$532,000
Based on Timber cribs construc- tion	
Cost per lineal foot of Berthage	\$817.



(5)	Cost per 600' Berths at Richmond Without Transit Sheds.	\$417,000
	Based on Timber cribs construction Cost per lineal foot at Berthage	\$ 640
(6)	Cost per 600' Berths at Rockingham, exclusive of Sheds	\$336,000
	Based on timber cribs construction. Cost per lineal foot of Berthage	\$ 517
	If investigation shows sufficient overburden on Harbour bottom to hold piles, cost would be much less.	
(7)	Cost of 700' Berth as at Pier No.2	\$1,150,000
	(Reinforced concrete pile construc- tion) with reinforced concrete deck and two storey Transit Sheds	\$ 1,670
(8)	Cost of 600' Berths as at Pier No. 3	\$199,280,000
	Timber Pile construction with Tim- ber deck and Transit Sheds	
	Cost per lineal foot of Berthage	\$327.
(9)	Cost of 600' Berths at Central Sector	650,000
	Timber Pile Construction with Timber Deck and Transit Sheds	
	Cost per lineal foot of Berthage	\$1,000



### Property Value Central Sector:

It is estimated that the land area of private properties, including those held by Government Departments, in the Central Sector between Ocean Terminals and Deep Water Terminals, is about 1,250,000 square feet. There is in addition about 500,000 square feet of wharves in this area. Buildings of various kinds on this area cover about 800,000 square feet.

Probably about five and one-half million dollars would represent the present market price of this property. It is difficult, however, to estimate closely the total amount which might have to be paid to present owners in case a Government Department should take over the property. Manifestly a great deal would depend upon the methods pursued in connection with the acquisition of these properties.

### Types of Construction for Future Berthage:

The results of the experience in this Harbour to date would indicate as follows:

- (a) Timber piling (creosoted) with timber frame deck and Transit Sheds - Cheapest in first cost - Working life about 25 to 30 years - Can use piles up to 80' in length at outer ends.  
(most suitable type where Harbour bottom will hold piles, e.g. Deep Water Terminals and a considerable portion of Central Sector)
- (b) Timber crib work (with creosoted face) - cheapest after (a) in first cost - Life about 40 years (below L.W.L)-suitable for Piers etc. of moderate depth where bottom will not hold piles, and for Quay construction with reclaimed area behind.
- (c) Quay Wall construction on reinforced concrete cribs - for deep draft reinforced berths on rock bottom or rubble mound as at Ocean Terminals.
- (d) Quay wall construction of cellular blocks similar to that used in first unit, Ocean Terminals - Considerably more expensive than (c)



Types (c) and (d) have proved expensive in first cost.

Bids received in recent years for rock dredging ran high, averaging about \$6.00 per cubic yard in situ.

In addition to the above, various other suitable types of construction should be carefully studied before placing contracts for further units of extension, with a view to reducing the capital expenditure, as far as possible, consistent with reasonable cost of upkeep and operating efficiency.

The cost of quay construction consisting of reinforced concrete deck carried on cylinders with a rubble bank sloping upwards from the face of the quay to the rear of deck and covered on inside face with a clay blanket in order to hold pumped sand filling for the retained area, should be investigated.

In connection with the future development of the Central Sector, it is suggested that timber wharf face supported on creosoted timber piling should be used in the initial construction for a considerable portion of the front. This wharf face might be placed at a line which would give from thirty to thirty-five feet draft.

A rubble bank could be placed after the piling was in position, sloping from wharf face to the back of the deck, the inside face covered with clay blanket and the area to be reclaimed behind pumped full of sand, as under the suggested cylinder construction. Single storey timber Transit Sheds of cheap construction could be placed on this wharf face and extend back on the fill. This construction would serve for medium and smaller shipping for a considerable period. Finally, near the end of the working life of the timber construction a permanent quay wall could be placed outside of same to give, with necessary dredging if required, a draft of 45'; the timber decking could be removed and the area filled in to the permanent quay wall.



Tentative Set Up Of Berthage Construction

Year	Estimated No. of Berths Rec'd.	Provide
1935	19	Existing 16 + Pier "B" + Berth 26 Plus a berth for open storage at Richmond Terminals. . . . . = 22
1940	23	Complete Pier "A"! Assume 2 berths taken by Fishing Companies and two available for general berthing. . . . . 24
1945	25	Provide Berth 19 at north end of existing Berth 20 & Pier 1 south existing Pier 2 27
1950	28	Provide small Pier between Pier 1 and Furness Pier 28
1955	32	Fill in center sector from Berth 19 to Furness Pier - about 3,000 ft. of quay say 1 berth of permanent construction, the balance with temporary timber wharf face This work might extend to 1957 probably. 32

The above is by way of a preliminary study only to indicate the nature and scope of the problem. Existing Piers Nos. 3 and 4 will have to be reconstructed within the period considered and probably within the next ten years. As pointed out previously, Pier No. 3 should be enlarged considerably and lengthened to give an area approximately that of Pier No. 2. Pier No. 4 should be similarly lengthened and widened to probably 160'. This would, in effect, provide an additional berth as this Pier now with its present width cannot serve a ship on each side. These reconstruction jobs would have to be fitted in to the general scheme of new work extension. They could probably be carried out to a great extent in the summer months so that there would not be a loss of berthage during the busy shipping season in the winter. In the development of the Central Sector one berth at the south end would be constructed and operated by an extension northwards of the present trackage at the Ocean Terminals; similarly, the portion between existing Pier No. 2 at Deep Water Terminals, and the



Furness Pier, could be developed and operated by an extension southwards of the Deep Water Terminals. These two ends could be operated in this way without disturbing the Central Sector.

It would be necessary to provide accommodation for Fishing Companies etc. elsewhere, as at Pier "A"-1, before extending the present bulkhead landing quay to the north for an additional Port-of-Call Berth.

The next step in the development of the Central Sector would require the clearing out of the whole area and the placing of through trackage between the Ocean Terminals and Deep Water Terminals. The terminal warehouse could then be extended with additional trackage on both sides, connecting and operating in both directions, and the water front would be available for berthing construction, as needed. It is suggested that it would be economical at this stage to develop the whole of this front so that a revenue would be obtained. As suggested above, the greater part of it could be carried out with temporary wharf facing.

If, during the period under review important interests wish to lease a Pier or group of berths, it might be expedient to complete Pier "C" before proceeding with the development of the middle portion of the Central Sector.

As already pointed out the important problem for the next several years should be the completion of work now under construction and the gearing up and supplementing of existing facilities in order to secure maximum efficiency in operation.

Studies in much more detail should be made in connection with all succeeding units to the end of obtaining a maximum economy in layout and design. The experience of former units in regard to first cost, upkeep and operation should be continuously utilized and broadened out with the applicable results of experience in other world Ports.

#### Supplementary Facilities:

As traffic develops, additional units to the Grain Elevator System may be required. As previously pointed out, and as shown on the appended plans, a suitable location for a central elevator would be available east of Lower Water Street in the Central Sector.

When the completion of the Ocean Terminals is carried out with the construction of Piers, "C", "D", an additional Elevator Unit will probably be required which should be placed just west of Pier "C", and the Gallery System of same inter-connected with the extension of the Galleries from



the present Elevators to Pier "B".

A larger Graving Dock will be required in the course of years. It is suggested that this should be placed at Tuft's Cove.

Additional lifting and cargo handling equipment will be necessary, as, Floating Cranes, Mobile Dock Cranes, etc.

Consideration should be given to the provision of a Fire Boat to protect the Harbour front property.

The problem of reducing costs of handling traffic by mechanical means etc. should be continuously under view and necessary equipment provided wherever economy is shown, having regard to reduction of operating costs and the minimizing of ship's time in the Port.

May 23, 1931.







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## PORT OF HALIFAX

### GENERAL

#### Location:

The Port of Halifax is located about midway of the southeast or Atlantic Coast of the Province of Nova Scotia of the Dominion of Canada, - Lat.  $44^{\circ} - 30'$  N., Long.  $63^{\circ} - 35'$  W.

It is 599 nautical miles from New York and 2,540 nautical miles from Southampton.

The position of the Port is about 175 nautical miles north of the usual steamship lanes, between New York and Europe.

#### Sailing Distances:

The Port of Halifax is nearer than any other North Atlantic Port to all Ports of Europe and Africa; to the principal Atlantic Ports of South America and to all Asiatic Ports as far east as Hong Kong.

The sailing distances from Halifax and other representative North Atlantic Ports are given in the following table:

Distance from	Halifax Nautical Miles	New York Nautical Miles	Boston Nautical Miles	Portland Nautical Miles	Montreal Nautical Miles.
<u>To Europe</u>					
" Antwerp	2,759	3,310	3,128	3,050	3,281
" Bristol	2,462	3,006	2,831	2,753	2,977
" Liverpool	2,485	3,036	2,854	2,776	2,760
" London	2,719	3,270	3,088	3,010	3,241
" Bordeaux	2,647	3,279	3,016	2,938	3,169
<u>To So. America</u>					
" Buenos Ayres	5,701	5,838	5,804	5,849	6,421
" Montevideo	5,586	5,723	5,689	5,734	6,306
" Pernambuco	3,541	3,678	3,644	3,689	4,261
" Rio de Janeiro	4,611	4,748	4,714	4,759	5,331



Distance from	Halifax	New York	Boston	Portland	Montreal	(Con't)
To Asia-China						
Hong Kong	11,046	11,336	11,390	11,334	11,569	via Suez Canal
Colombo	8,060	8,595	8,404	8,343	8,583	" "
Singapore	9,606	10,141	9,950	9,894	10,129	" "
Calcutta	9,260	9,795	9,604	9,548	9,783	" "
Bombay	7,618	8,153	7,962	7,912	8,141	" "
South Africa						
Cape Town	6,423	6,795	6,776	6,787	7,108	
N. Zealand						
Wellington	8,866	8,500	8,701	8,749	9,671	via Panama "
Australia						
Sydney	10,070	9,704	9,905	9,953	10,875	" "
Melbourne	10,327	9,961	10,164	10,210	11,132	" "
Philippine Islds.						
Manilla	10,949		11,293	11,237	11,472	Suez Panama "
Manilla		11,405				

Entrance:

The mouth of the Harbour is over 5 miles wide.

The distance from the open Atlantic to the Passenger Landing Quay of the Port is 7.6 nautical miles.

The entrance as defined by the Harbour ranges has only two small deviations from a continuous straight line; its width varies between a mile and a half mile and its depth from 110 feet to 50 feet.

Character of Harbour:

Halifax Harbour, including Bedford Basin, has an area of about 10 square miles of water over 45 feet in depth. The Harbour proper is about  $5\frac{1}{2}$  miles long and  $1\frac{1}{2}$  miles at the widest section, with an average width of  $\frac{3}{4}$  of a mile; its average depth is about 70 feet.

The bottom is rock overlayed with a comparatively shallow layer of clay, which in turn is covered with Harbour



mud.

The tributary area which discharges its run-off into the Harbour is small and of rocky formation and consequently there has never been any trouble from silting.

The water of the Harbour is of uniform salinity closely approximating that of the ocean and it remains comparatively cold even in mid-summer.

The tide range varies from about 4 feet at Neap Tides to about 6.5 feet at Spring Tides.

The Harbour proper is free from ice throughout the year.

The upper part of the Harbour, Bedford Basin, is at present used for anchorage (capacity 100 ships) and speed trials for which there are measured mile marks.

Owing to the sheltered and land-locked conditions, the wide turning areas and the absence of currents, navigational difficulties are reduced to a minimum in this Harbour. At the Port of Halifax it is practicable to berth even such ships as the S. S. "Olympic", under their own power and without the aid of tugs.

ridges:

There are at present no bridges across navigable waters at the Port of Halifax.

A scheme is now under consideration for the construction of a high level highway bridge across the Harbour at North Street which is some distance north of the Deep Water Terminals. This bridge would not interfere in any way with navigation.

A railway, or a combined railway and highway bridge, located at the Narrows some distance north of the Richmond Terminals will be required in the near future. This bridge would be entirely north of the Harbour proper and the Port Terminals hereinafter described. It would, however, contain a draw span of approved type and clearance to accommodate navigation into the upper reaches of the Harbour and Bedford Basin.



Aids to Navigation:

The general set of the outside current is S.W. about  $\frac{1}{2}$  to 1 knot per hour.

The approach to the Harbour is free of all danger and the entrance is marked by Sambro Light Vessel and Sambro Island, on which there is a good light and telephone communication to Chebucto Head.

Chebucto Head Light on the Western shore and Devil's Island on the Eastern shore, mark the entrance to the Harbour.

Chebucto Head has a good light and there are powerful fog horns on each station.

Close to Chebucto Head is a wireless station with direction finder, which can give bearings to approaching ships, enabling them to steer a safe course into the pilotage grounds off Chebucto Head.

The pilot boats are fitted with wireless telephones in connection with the signal station on Citadel Hill, so that it is possible to establish communication with vessels in thick and/or bad weather when a pilot is unable to board them.

The entrance to the fairway is marked by two large buoys, the outer and inner automatic light and whistling buoys, and the course inwards is almost straight. The adjacent shoals, Neverfail, Lichfield, Thrumcap and Mars Rock being marked by buoys. From below Sandwich Point the course to Quarantine Grounds is marked by range lights. Thence up the Harbour a ship can pass on either side of George's Island either to anchorage or to berth at one of the Piers.

The tidal current within the Harbour never exceeds  $\frac{1}{2}$  knot per hour, except at the Narrows entrance to Bedford Basin, where it may reach  $\frac{3}{4}$  knot per hour.

Port Organization and Regulations:

The Port of Halifax consists, on the Halifax side of the Harbour of the Government Terminals Properties which are vested in the Department of Marine at Ottawa,



other Government Marine Properties under the Department of National Defence, and privately owned wharves and other water-front properties.

On the Dartmouth side of the Harbour there is a public pier which was built by the Department of Public Works, Ottawa, and is operated directly by the Department of Marine, Ottawa; the Atlantic Headquarters consisting of wharf, store-rooms and offices of the Department of Marine at Ottawa, and a number of private wharves.

The Halifax Harbour Commissioners, who were incorporated by Dominion Government Legislation in 1927, control the Harbour and administer the Government Terminal Properties on the Halifax side of the Harbour.

The Commissioners are empowered by the Incorporating Act to make By-Laws, appoint Officers and perform such other acts as are necessary in their office.

They are enabled by Acts of Parliament to borrow money from the Dominion of Canada, by means of Debentures in order to provide for the capital expenditure which they may find necessary for construction and equipment; they may also levy charges on Ships and Cargo in accordance with their By-Laws in order to provide for revenue with which to carry on the services of the Port.

At the Terminals administered by the Harbour Commissioners, all berths are open for allocation to any Steamship. Steamship owners or Agents should apply in advance for berthing and transit shed accommodation, giving specifications of the ship and the character of its cargo.

#### Naval and Military Stations:

Halifax is the oldest British Naval Station in Canada, and is at present one of the two defended Ports in Eastern Canada. It is a Station of the Royal Canadian Navy.

Since its founding, the City and Harbour entrance have always been defended by formidable land fortifications.

Various units of the Canadian Department of National Defence are stationed at Halifax.



Nature and Extent of Commerce:

The Port of Halifax is a Port of general commerce handling a comparatively large and valuable foreign trade. It affords a greater frontage on deep water than any other Canadian Port with room for indefinite expansion.

The Port of Halifax is the only Port on the Atlantic Coast of Canada capable of handling the largest ships as yet constructed. The Port serves an immediate hinterland with a total population of approximately 1,000,000 people and provides a twelve-months outlet for the commerce of the Dominion.

Halifax is centred in the large industrial areas of Nova Scotia and forms an outlet for the exportable surplus of agricultural products of the Maritime Provinces, as well as the fisheries. It is also the centre of the coastwise Nova Scotian Traffic and the West Indies and South American Routes.

The principal exports are apples, potatoes, fish, flour, grain, automobiles and general cargo.

The chief imports consist of grain, fresh fruits and vegetables, dairy products, coal and general cargo.

Official returns for the fiscal years ending March 31st, give the total foreign commerce of the Port of Halifax (exclusive of coastwise traffic) as follows:

YEAR	CARGO TONNAGE INWARD	CARGO TONNAGE OUTWARD	TOTAL
1925-26	526,193	580,618	1,106,811
1926-27	525,620	544,746	1,070,366
1927-28	882,604	543,832	1,426,436
1928-29	787,411	536,156	1,323,567
1929-30	887,337	498,862	1,386,199



### EXCISES, SERVICES & CHARGES

The terminal Properties administered by the Harbour Commissioners are as follows:

#### (1) Berthage and Transit Sheds:

##### (a) Richmond Terminals

These Terminals as not administered by the Halifax Harbour Commissioners, consist of an irregular shaped area containing about 320,000 square feet or 7.35 acres.

###### Pier No. 9

The quay face, known as Pier No. 9, is about 700 feet long running parallel with the shore. Draught at low water about 30 feet. The south quay, approximately at right angles to the shore, is about 220 feet long and provides a draught varying from 30 to 5 feet for barge berths.

A considerable portion of the quay section is leased to private industrial concerns. The Canada Cement Company has a modern unloading and storage plant at the north end of the property.

The Harbour Commissioners have reserved two portions of the quay for open storage.

###### The Stock Sheds:

In addition to the quay space, but included in the 7.35 acres is a strip about 122 feet wide, extending southerly from the above described quay space and between the Halifax Shipyards Limited on the one side and the Canadian National Railways on the other side. This strip forms the site of the stock sheds and provides an entrance roadway to the quay space.

The stock sheds consist of a main building and an interconnected system of branding houses and runways. The main building is of timber construction 500 feet long by 79 feet wide by 14 feet high at the posts, with a pitched roof.



Stalls and pens fitted with metal water troughs and water drainage connections supply accommodation for 1,000 head of cattle. A system of timber runways extends from the north end of the Main Building across the quay area to the main quay face for use in transferring cattle to shipboard.

### Railway Connections

The whole area is well served by railway connections. It lies just east of the C. N. R. Main Line to Deep Water Terminals and Yard Tracks at this point. A double track spur extends along the main quay face and a number of spur lines are located along the west side of the area. The Main Building of the stock sheds is served by a track on each side.

### Roadway Connections

The roadway entrance is from Barrington Street, one of the main City thoroughfares.

#### (b) Deep Water Terminals

Deep Water Terminals commences at a point about one and one-quarter miles south from the southern end of the Richmond Terminals. The intermediate water front is occupied by the Halifax Shipyards and Dockyard. The frontage from the southern boundary of the Dockyard to the southern boundary of these terminals at the foot of Proctor Street is about 1930 feet. The land area is about 140,000 square feet or 3.3 acres.

The property is served by the C. N. R. Trackage which connects around the east shore of the Halifax peninsula with the main line at Fairview. Water is supplied by three 6-inch cast-iron pipes from the City System and several hydrants are located along the central portion of the land area. A 6-inch water connection is carried out to Pier No. 2 and branch pipes extend the full length of the Pier to supply standpipes for fire protection and outlets for ships' supply.

At present the steam supply is taken from the C. N. R. Boiler House located near the southwest corner of the property. The electrical connections are taken from



the City service.

The Piers of these Terminals are as follows:

Pier No. 2

This Pier and Transit Shed, which is of reinforced concrete construction was built during the years 1912 to 1915. The Pier is about 780 feet long by about 235 feet wide.

The depth of water varies from 33 feet to 57 feet.

The Shed is two storey, 680 feet long by 200 feet wide of reinforced concrete construction, fitted with continuous metal sliding doors along each side, stairways, cargo chutes and escalators.

The Transit Shed is fitted with Office accommodation for Customs, Steamship Companies, etc. and Rest Rooms for Stevedores.

Four Railway tracks depressed 4 feet below Shed floor level, serve the Shed one on each side between the Shed and the Pier edge and two running down the center of the Shed.

Pier No. 3

This Pier which is about 617 feet long by 160 feet wide is of timber pile construction. The depth of the water at its berths varies from 35 to 45 feet at low tide.

A single storey timber Transit Shed, 548 feet long by 125 feet wide, equipped with the usual Steamship, Customs and other Offices, is located on the Pier.

It is served by 4 depressed tracks, one on each side between the Shed and the Pier edge, and two running down the center of the Shed.

Pier No. 4

This Pier is of timber pile construction similar to Pier No. 3.



It is about 544 feet long by 92 feet wide. The depth of water along the south berth varies from 25 to 30 feet and along the north from 18 to 23 feet.

It is served by a single storey Transit Shed 433 feet long by 56 feet wide with two depressed tracks, one on each side between the Shed and Pier edge.

(c) Ocean Terminals

The Ocean Terminals, as at present in operation, constitute the first unit of an extensive scheme of Port Development at the South end of Halifax.

This scheme was laid out on the basis of a Passenger Landing Quay, 6 Basins and 5 Piers, with a protecting Breakwater at the South. It also included a new double-track railway connection around the west side of the Halifax Peninsula, together with extensive Terminal Yards to serve these Piers and Quay.

The Railway connection and the Port Facilities as described below were constructed some years ago. An additional Pier with Basins is now in course of construction.

(1) The Bulkhead Passenger Landing Quay extends 2,007 feet along the Harbour front in a northerly and southerly direction. From the south end of same the Quay runs at right angles westerly for about 700 feet, and thence in a southwesterly direction another 500 feet, forming the northern boundary of Basin No. 1. Depth of water at low tide is 45 feet, along the Passenger Landing Quay, 35 feet at east berth and 30 feet at west berth of Basin No. 1.

On this Landing Quay are located the Harbour Commissioners' Administration Building and Transit Sheds, as follows:

Administration Building: Built 1929. Three storey reinforced concrete and tile construction faced with brick. Size 100 feet by 66 feet. It is built on concrete foundation walls and pedestals resting on timber piles driven into the fill. This building is situated about 60 feet from the north end of the Landing Quay.



Transit Shed No. 20: Built 1929 - Adjoining the Administration Building and extending southerly along the landing Quay. This is a single storey Shed, 596 feet long, by 95' wide. It is of steel frame construction resting on concrete foundations and timber piling, with a concrete floor mastic covered. The height from floor level to eave is 27 feet. The roof deck is of timber construction covered with five ply tar and gravel roofing. The walls are covered by corrugated sheet metal. The east and west sides of the Shed are fitted with continuous sliding timber doors.

Transit Sheds Nos. 21 - 22: Completed 1926. These two sheds form a continuous building, 1,262 feet long by about 96 feet wide. They join the southern end of Transit Shed No. 20 and extend southerly along the Landing Quay to Basin No. 1. They are two storey steel frame construction 40 feet high from floor to eave on the west, or track side, and 54 feet on the east, or Harbour side. The foundations are concrete, the lower floor being covered with Mastic. The roof decks are of laminated timber with five ply tar and gravel roofing, and the walls of the Sheds proper are covered with Asbestos Protected Metal, except at end portions which are brick walled. The TransitSheds are fitted with continuous sliding timber doors on the lower floor 7'-9" high on the track side, and 18'-9" on the Harbour side. The second floor has continuous sliding doors, 13' high, on the Harbour side only,

A two belt enclosed Grain Conveyor Gallery located just under the roof, extends the full length along the Harbour side of these two Sheds.

The electrically operated Travelling Grain Spouting Towers are carried on rails on the roofs of these Sheds. These Towers take the grain from the Conveyor Belts and spout it into Ships' holds, at any required position along the Landing Quay.

These Sheds are also equipped with cargo hoisting beams pivoted over the Harbour edges of the roofs,



The central portion of the continuous building forming these two Sheds is brick walled and forms an Office Building about 110 feet long. The ground floor of this portion is occupied by Steamship Companies' Offices. The upper floor is occupied by the United States Immigration Officials. The Canadian Immigration Offices are on the second floor of Transit Shed No. 21 and the Canadian National Port Agent's Offices and the upper floor in Transit Shed No. 22.

A brick fire wall separates Transit Shed No. 20 from No. 21. Transit Sheds Nos. 21 and 22 are divided by brick fire walls, equipped with automatic fire doors, and these together with the brick walls of the central Bay permit the Transit Shed facilities on the Landing Quay to be separated into five sections, in case of fire.

A cargo landing or trucking platform outside of the Sheds, of concrete mastic finished, extends along the whole length of the Landing Quay on the Harbour side. It is about 12 feet wide and is at the same elevation as the floor of the Sheds.

Transit Sheds Nos. 20, 21 and 22 are served by five tracks along the west side, the floors of the Sheds being 4 feet above rail.

Transit Shed No. 23 situated on the Passenger Landing Quay on the north side of Basin No. 1, is one storey of timber frame construction 506 feet long by 90 feet wide and 17 feet high at eaves. The foundations are concrete walls and pedestals. The floor is concrete, covered with Mastic. The walls are covered with Clapboards. There are timber sliding doors on both sides of the Shed.

Three depressed tracks serve the north or land side of the Shed, and one track passes along the Basin side, at the same elevation as the Shed floor.

Transit Shed No. 24 is situated on the Passenger Landing Quay at the western end of the north side of Basin No. 1. It is of timber frame construction 440 feet long by 90 feet wide. It is one storey, being 17 feet high to the eaves. The floor is concrete covered with asphalt plank. The foundations are concrete walls and pedestals. This Shed



was converted into a frostproof and temperature-regulated warehouse in 1930. A continuous concrete tunnel with open top covered with cast iron gratings, extending along the north and south sides and east end of the Shed contains the steam-heating system. Return air ducts from the floors of the Shed maintain the air circulation. Refrigerator-type doors have been installed on both the sides and ends. Double windows have been installed over the doors on each side, the walls insulated and an insulated underhung ceiling constructed.

Three depressed tracks serve the north or land side of the Shed and one track passes along the dock side at the same elevation as the floor of the Shed.

(2) Pier "A", extends out from the shore in an easterly direction 1,250 feet. It is 320 feet wide at the outer end, and 360 feet wide at the inner. The depth of water at all berths is 45 feet at low tide. Basin No. 1, situated between the Landing Quay and Pier "A" is about 350 feet wide at the east end. This width is maintained for about 700 feet and then the Basin decreases to 95 feet in width at the west end.

Three Transit Sheds are located on this Pier as follows:

Transit Shed No. 25 situated on the Northwest corner of Pier "A", occupying the inner berth on the south side of Basin No. 1. It is of timber frame construction, 594 feet long by 90 feet wide, on concrete foundation walls and pedestals. The floor is concrete covered with Mastic. It is a one storey building 26 feet high to the eaves. There are timber sliding doors on both sides of the Shed. Walls covered with Clapboards.

Three tracks serve the south or land side of the Shed, the level of rail being 4 feet below the floor of the Shed. A cargo landing or trucking platform, about 12 feet wide, extends along the Basin side of the Shed. A single track at an elevation 4 feet below the floor of the Shed, runs along this side of the Shed between the platform and the edge of the Pier.

Transit Shed No. 28, situated on the southwest corner of Pier "A", occupying the inner berth on the north side of Basin No. 2. It is of timber frame construction 550 feet long by 90 feet wide, on concrete foundation walls



and pedestals. The floor is concrete covered with Mastic. It is a one storey building, 26 feet high to the eaves. This shed is fitted with 20 steel Ogden type Turnover Doors about 14 feet high on the Basin side, and continuous sliding timber doors, 8 feet high on the land side. Walls covered with Clapboards.

The Shed is served by three tracks on the land side, the rail being 4 feet lower than the Shed floor and one track on the Basin side. A cargo landing or trucking platform extends along the Basin side, continuing along past Transit Shed No. 27 to the east end of Pier "A". It is about 12 feet wide of concrete construction covered with Mastic.

This Shed contains a five room suite of Offices for the use of the Canadian National Steamship Officials, floor area - 2,180 sq. ft.

Transit Shed No. 27: This is a new, single storey Shed built in 1929-30, situated on the southeast corner of Pier "A", occupying the outer berth on the North side of Basin No. 2. The main Shed is 655 feet long by 90 feet wide, without interior columns. A three-track Train Shed, 42 feet wide extends the whole length of the Shed, on the north side.

Main Shed: Structural steel columns on concrete foundations. The roof is segmental of Lamella type, Gyproc lined on the inside and covered with Murray-made, type "A" fire-ply, built-up roofing. Continuous sliding timber doors are furnished on both sides of the Shed. Those on the Basin side are about 19 feet high, and on the Train Shed side about 15 feet. The height from floor to eaves, about 25 feet. The floor is of concrete surfaced with Asphalt Mastic.

Train Shed: Structural steel columns, roof beams and purlins. Timber roof covered with tar and gravel and lined on the inside with Toncan Sheet Metal.

A brick fire wall, with fire door, forms a division between this Shed and the eastern end of Shed No. 28. A brick wall forms the east end of both the Main and Train Sheds. The other walls of both the Main and Track Sheds are covered with corrugated Sheet Metal.



The cargo landing platform described in connection with Transit Shed No. 28, extends the whole length of the Shed on the Basin side. The Shed is served by one track on the Basin side and three tracks with cross-overs in the Train Shed. Rail level is 4 feet below floor level in Main Shed.

A special Temperature-regulated Storage for the holding and ripening of West India Fruits and Vegetables is provided in Shed No. 27. It consists of four insulated chambers, each about 30' x 24' with connecting vestibules and corridors. In two of the chambers, temperatures from 40° to 55° Farenheit can be maintained and in the other chambers, temperatures from 50° to 70° .

Berth No. 26 on this Pier is at present occupied by the Dominion Coal Company, with their Coal-handling plant and Coal storage.

Water and Sewerage: The Ocean Terminals area, including Berths and Transit Sheds Nos. 20 to 28 inclusive, is completely served with water and sewerage systems. The water supply is taken from the City system.

Offices, Hot Rooms, Etc. Transit Sheds Nos. 20 to 28 inclusive, are provided with Offices, Gear Rooms, etc. for the Customs, C. N. Railways and the various Steamship and Stevedoring Companies.

There are also heated Rest-Rooms and Latrines for the Stevedores.

The various Transit Sheds are provided with special compartments for heated and locked storage.

Heating System: Steam heating is used for the Immigration Quarters and all heated temperature regulated spaces in the Transit Sheds. Purchased steam is used for one portion of the property and a central Boiler Plant, operated by the Commissioners, provides for the remainder of the heating requirements.

(d) Dartmouth Pier

This Pier was built by the Public Works Department of the Dominion Government in 1924, and transferred to



the Department of Marine for operation. It is 370 feet long by 60 feet wide and is of creosoted timber pile construction. The depth of water is from 27 to 30 feet at the outer end and 16 to 18 feet at the inner end.

This Pier is located a short distance north of the C. N. R. Terminal Yard, Dartmouth, and is served by two spur tracks, one on each side of the Pier extending full length.

There is no transit shed on this Pier. It has been used generally in connection with the lumber trade

(e) Private Wharves:

On the Halifax side of the Harbour there are about 44 privately owned wharves, with an area of about 500,000 sq. ft; the depth of water at these wharves varies from 20 to 35 feet; transit shed accommodation on these wharves totals about 150,000 sq. ft. These wharves generally are of timber pile construction, except in the case of the Furness Withy Steamship Company's Wharf, which is of modern reinforced concrete construction carried on cylinders with a reinforced concrete Transit Shed.

On the Dartmouth side of the Harbour there are a number of privately owned wharves.

(2) Fire-Prevention Service and Equipment:

Transit Sheds and other buildings of the Harbour Commissioners are furnished with hand chemical extinguishers, pails and water casks.

Five 40-gallon hand portable indoor type, chemical engines on wheels and one portable hose reel are available at a central point at the Ocean Terminals. Two portable hose reels are available at Deep Water Terminals.

Very efficient and complete water distribution systems, consisting of 6, 8, 10 and 12-inch cast iron pipe laid below frost level, connected with the City



Water System, serve the several Terminals. These Systems are provided with numerous hydrants at strategic points and complete series of standpipes in the interiors of all Sheds and buildings. The standpipes are equipped with hose reels and outside hose houses are located at central points in each Terminal.

Fire alarm boxes connecting with the City alarm system have been installed to serve the various Terminals.

At the Ocean Terminals a motor-driven fire pump is directly connected to the Water System. This pump is housed in a fire-proof concrete structure, has a capacity of 2,500 gallons-per minute at a pressure of 130 pounds per square inch. This pump could be put in operation in the event of failure of pressure of the City water supply; or, if sufficient quantity could not be obtained from the City System, it could be put in connection with the salt water supply of the Harbour and would deliver same under high pressure to all parts of the system.

Transit Sheds are provided with fire walls and automatic fire doors as described under Section 1.

#### (3) Police Protection:

The Port of Halifax is patrolled by a Police Force under the jurisdiction of the Halifax Harbour Commissioners. The regular force consists of 22 men and officers with additional trained watchmen or Police available when required. The Police operate on 8-hour shifts and are on duty 24 hours each day. Immediate contact to various police officers is provided by telephone through Harbour Commissioners switchboard at the Administration Building.

#### (4) Railway Terminals:

Halifax is the Atlantic Terminus of the Canadian National Railway System.

The Main Line of the C. N. R. through Moncton and Truro ends in Halifax.

The C. N. R. South-western Line (the former H. & S.W. Railway) extends from Halifax to Yarmouth.



The Eastern Railway, or the Dartmouth to Deans Branch of the C. N. R. begins at Dartmouth, across the Harbour from the Halifax Terminals and is connected via Windsor Junction with Halifax.

The D. A. R. (a C.P.R. subsidiary) runs from Yarmouth to Halifax, coming in over the C. N. R. from Windsor Junction.

The C. N. R. approaches Halifax by the West Shore of Bedford Basin. The Main Line now enters Halifax along the West side of the peninsula to the Railway Station which is located at the Ocean Terminals.

From Fairview, a branch extends around the north and east shores of the Peninsula and passing Richmond Terminals extends as far as the Deep Water Terminals.

Within recent years an extensive storage and classification yard has been constructed along the shores of Bedford Basin between Rockingham and Fairview. This Yard has a capacity of 1,280 cars. The main line operation of freight trains terminates at this Yard and cars are handled thence to the Ocean Terminals or to Deep Water, etc. by shunting engines. A double-track line connects Fairview with the Ocean Terminals and with the Deep Water Terminals.

At both Richmond Terminals and Deep Water Terminals, there are extensive storage yards with team tracks and other facilities, with capacities of 840 and 640 cars respectively.

At the Ocean Terminals there is at present a very large yard capacity providing for about 1,350 cars. An extensive area is available at these Terminals for future trackage and yard enlargement to serve future Piers as they are constructed.

All quay spaces and Piers are served by an exceptionally complete system of trackage, as described under Section 1, which provides in all for about 350 cars. The Canadian National Railways owns and operates all Trackage at the Port.

#### (5) Grain Elevators:

The Grain Elevators and Conveyor Galleries connecting them with the docks are located at the Ocean Terminals.



There are two reinforced concrete Elevators.

No. 1 is 209 feet long by 70 feet wide by 130 feet high, containing 48 cells 16' 9" diameter, 108 feet high and 33 interspaced cells. Total capacity 1,129,300 bushels.

No. 2 is 261 feet long by 70 feet wide by 130 feet high, containing 56 cells 16' 9" diameter, 97 feet high and 39 interspaced cells. Total capacity 1,106,150 bushels.

Working and Shipping House No. 1, - located at the northeastern end of Elevator No. 1 is built of structural steel covered with corrugated iron. It is 80 feet by 66 feet by 190 feet high. The scale equipment is two 60-ton and three 30-ton beam type scales.

Working and Shipping House No. 2, - between and connecting the two elevators, is built of structural steel covered with corrugated iron and is about 61 feet by  $25\frac{1}{2}$  feet by 150 feet high. Scale equipment is two 30-ton beam scales.

Cleaning House: - Built of structural steel covered with corrugated iron, is 16 feet by 20 feet by  $12\frac{1}{2}$  feet high. This house contains one No. 11 Monitor Type "B" Warehouse Separator having a capacity for cleaning about 10,000 bushels per hour. There is also an Automatic Bagger of 5-bushel capacity, capable of filling 50 bags or 250 bushels per hour.

Unloading House: - Built of structural steel covered with corrugated iron is 100 feet long by 45 feet wide by an average of about 35 feet high. This building contains the Car Dumper and pits. The Car Dumper is a Metcalf suspended type of 7 cars of 2,500 bushel capacity per hour. There are two pits of 2,500 bushel capacity.

Car Puller: - This is a double winch puller capable of handling 5 cars of grain at one time. It is driven by a 3 phase, 60 cycle, 550 volt, 40 H.P. Motor at 682 R.P.M. This puller is housed in a structural steel corrugated iron covered building 22 feet by 22 feet one storey high.



Conveyor System: - The Grain is conveyed from the Elevators to the Shipping Houses and thence to the dock sides by a moving belt system passing through enclosed overhead Galleries. There are about 5,524 lineal feet of Galleries, and the total loading capacity is 90,000 bushels per hour. The berths served are Nos. 21, 22, 23, 24 and 25. At Berths Nos. 21 and 22 the loading is done by means of Travelling Spouting Towers on the roofs of Transit Sheds Nos. 21 and 22. These are electrically driven and are supplied by one belt each. The capacity of each is 15,000 bushels per hour.

Railway Track Facilities: - There are approximately 6,200 lineal feet of track in the Elevator yards. This will permit the storing of about 125 cars.

Office and Shops: - The Administrative Staff, Shops and Rest-rooms are housed in two small one storey brick buildings, approximately 51 feet by 22 feet and 16 feet by 20 feet. The small building contains the Rest-room, Electrical Switchboard with Outdock Sub-station attached. The larger building contains the Superintendent's Office, Storeroom, Electrical Superintendent's Workshop and the central Telephone Operating Board which controls a telephone system throughout the Elevators, Shipping Houses and Galleries. These two buildings are heated by a hot-water system from a boiler located in the smaller building.

Charges: - The charges for handling grain are as follows:

Elevating and Loading Charges  
(Not including shovelling grain in vessel or switching from Piers to Elevator on inbound grain ex water or cars).

	Export (Cents per bus.)	Domestic
Elevating grain from railway car, wagons, trucks or inland conveyance, including ten days (10) free storage and loading into vessel, car or other means of transportation	1.0	1.0
Elevating grain ex vessel to elevator including ten days (10) free storage and loading into vessel, car or other means of transportation	1.0	1.0



(Elevation and Loading  
Charges con't.)

Export      Domestic  
(Cents per bus.)

Loading bulkheaded cars of bulk grain, less than carload shipments, loading wagons, trucks, etc. exclusive of cost of materials used and charges for elevation, storage and loading charges named above

$\frac{1}{2}$

$\frac{1}{2}$

### Storage Charges

For each succeeding day or part thereof

1/25

1/40

#### Exception:

On export grain held in storage after May 1st of each year, the total subsequent storage charges shall not exceed  $1\frac{1}{2}$  cents per bushel provided such grain is cleared from the Elevator by midnight of November 30th of the same year. After November 30th the regular storage charges as shown above will apply without free time allowances.

### Extra Charges

Turning grain	1/8	2/5
Cleaning grain	$\frac{1}{2}$	1.0
Mixing grain	$\frac{1}{4}$	$\frac{1}{4}$
Bagging grain (Owners supplying bags and twine)	2.0	3.0

### Conditions

1. This tariff will expire November 30th, 1931, and is subject to change without notice.

2. All property is at owner's risk of loss by fire.



3. The rates per bushel shall be assessed on the following weights:

	Wheat	60 lbs. per bus.
(Canadaian	34	" " "
Oats (United States	32	" " "
(Other	34	" " "
Barley	48	" " "
Corn	56	" " "
Flax	56	" " "
Rye	56	" " "
Oat Scalpings	56	" " "
Screenings (Standard Recleaned)	34	" " "
All other grain	48	" " "
	60	" " "

4. Export grain is defined as grain finally released for shipment from Halifax, N. S., to British or foreign countries.

5. Domestic grain is defined as grain finally shipped to a point in Canada, United States, Mexico, Newfoundland or the Islands of St. Pierre and Miquelon.

6. On grain from foreign countries received into Halifax Harbour Commissioners' Elevator caution should be exercised to provide that this traffic has met with Canadian Government regulations governing the same, Halifax Harbour Commissioners are relieved of all responsibility due to delays of this nature.

7. Regular warehouse receipts will be issued against all grain as received into the elevator based on elevator weights as to cut-turn of car or vessel. These warehouse receipts must be presented for cancellation and all charges against the same paid before grain will be released for shipment.

8. Grain received by water or vessel, will be special binned and Halifax Harbour Commissioners will not accept responsibility as to final shipping weights from elevator for any grain received with a moisture content exceeding ten per cent as found on arrival at Halifax when grain is received into store. Warehouse receipts will be marked accordingly when issued.

9. Owing to limited elevator storage space, from time to time, shippers are requested to advise the Halifax Harbour Commissioners with particulars as to quantity.



kind and grade of grain and probable date of arrival as far ahead as possible.

10. When requested by the owner of the grain or his authorized representative and grain is handled at the elevator between the hours of 6 p.m. and 7 a.m. or on Sundays and/or legal holidays, the additional charge for such service will be subject to special arrangements.

11. This tariff is issued in accordance with the terms and provisions of the "Canada Grain Act, 1930" is subject to the approval as provided for in the "Halifax Harbour Commissioners Act" and, except as otherwise expressly provided for herein, is subject to the By-laws of the Halifax Harbour Commissioners.

#### (6) General Storage:

The storage capacities of the Harbour Commissioners' Transit Sheds are as follows:

Ocean Terminals: - 414,000 sq. ft. gross,  
say, 4,000,000 cu. " "

Deep Water Termi-  
nals 226,000 sq. " "  
say, 2,200,000 cu. " "

Total - 640,000 Sq. ft. gross  
6,200,000 Cu. " "

General storage charges are assessed at Halifax Harbour Commissioners' Pier as follows:

#### Import & Export Traffic

First seven (7) days or 3¢ per 100 lbs.  
part thereof Minimum 25¢

Second week or part thereof 6¢ per 100 lbs.  
Minimum 60¢

Specific charges are made for storage on Upper Floor Pier No. 2, Shed No. 27 and Shed No. 24 from time to time on special nomination of traffic as conditions warrant.

Dry storage charges depend on the nature and character of traffic and may be had on application to the Halifax Harbour Commissioners.



(7) Temperature-Regulated Storage

The capacities of temperature-regulated storage operated by the Harbour Commissioners are as follows:

At Ocean Terminals, 42,000 sq. Ft. gross  
say, 400,000 Cu. Ft. "

At Deep Water Ter-  
minals 94,000 sq. " "  
say, 900,000 Cu. " "

Total, 136,000 sq. ft. gross  
1300,000 cu. " "

Charges: - The charges for temperature-regulated storage at Ocean Terminals are as follows:

Top Wharfage Charges

Top wharfage charges will be assessed  
at 1.0¢ per 100 lbs.

Storage Charges

First ten (10) days 1.0¢ per 100 lbs.  
Each succeeding forty-eight  
(48) hrs. or part thereof 1.0¢ " " "

Conditions

1. This tariff will expire April 30th, 1931 and is subject to change without notice.

2. All shipments are subject to owner's risk of damage by frost, heating and/or deterioration and the Commissioners are in no way responsible for either quantity or condition of potatoes while in, or passing through the Commissioners' warehouse.

3. This tariff is issued in accordance with the Terms and Provisions of "The Halifax Harbour Commissioners Act" and except as otherwise provided for herein is subject to the By-Laws of the Halifax Harbour Commissioners.



The charges for temperature-regulated storage at Deep Water Terminals are as follows:

Storage Charges

<u>Number of Sacks</u> (Basis 150's Jute Net)	<u>Storage Charge</u> (Basis 100 lbs.)
1 to 9,999 sacks	Storage Charges as per By-Laws
10,000 "	15.0 cents
20,000 "	13.0 "
30,000 "	12.0 "
40,000 "	11.0 "
50,000 "	10.0 "
60,000 "	9.0 "
70,000 " and over	8.0 "

Top Wharfage

Top Wharfage charge will be assessed at 2.0 cents per 100 lbs.

Conditions

1. For the purpose of this tariff, the free storage arrangement under By-Law No. 92 will not apply.
2. All potatoes received into storage in second-hand bags will be at owners' risk without reservation.
3. Regular warehouse receipts will be issued covering Halifax Harbour Commissioners check of out-turn from inward carrier.
4. No pooling of shipments by any group of shippers in order to obtain the reduced storage charges for larger amounts will be permitted. Full storage charges will be assessed against all outbound shipments from Pier No. 2 in accordance with this tariff. Adjustment and payment of storage charges will be made by the holder of warehouse receipts upon delivery thereof to the Halifax Harbour Commissioners for outward shipments or upon the



expiry date of this tariff without further demand therefor if any potatoes are still remaining in storage at such time. Within thirty days after the expiry date of this tariff all potatoes shall be cleared by the owners from said warehouse without any cost or charge to the Halifax Harbour Commissioners.

5. This tariff is issued subject to approval as provided by "The Halifax Harbour Commissioners Act" and except as otherwise expressly provided herein, is subject to the By-Laws of the Halifax Harbour Commissioners.

6. This tariff will expire February 28th, 1931, and is subject to change without notice.

#### (8) Open Storage

The following areas are available on the Harbour Commissioners Properties for open storage:

Ocean Terminals -	5,600	square feet
Richmond Terminals	50,500	" "
Total	56,100	" "

Charges for open storage are approximately one-half of the charges made for covered or enclosed storage. Open storage is entirely at owner's risk except in specific instances.

#### (9) Cold Storage, Pre-Cooling and Dry Storage:

The plant of the Nova Scotia Public Cold Storage Terminals, Limited, which was opened for service in the summer of 1929, is located in the heart of the Ocean Terminals area. This plant, which is of fire-proof construction throughout, is privately owned and operated, but it forms an essential part of the Ocean Terminals facilities. It is connected directly with the C. N. Railway Terminal Trackage and is served by eight tracks, four of which are covered. It also has complete facilities for connecting with ocean shipping. This plant has a total refrigerated storage space of about one million cubic feet, which is sub-divided into "Cooler"



and "Freezer" Chambers. In a large portion of the Freezer Storage, temperatures as low as -15 degrees Far. can be maintained. The refrigerated storage provides facilities and conditions suitable for all classes of perishable goods as, eggs, vegetables, cheese, butter, meats and fish. The plant has special pre-cooling chambers in which apples, other fruit and similar commodities can be pre-cooled before shipping.

Large areas are available on the Shipping Floors for packaging, sorting and special services.

One of the most modern and extensive plants yet installed for the processing and brine freezing of fish is provided. This plant operates at a temperature of minus 40 degrees Far.

In addition to the refrigerated facilities, large spaces are available for dry storage, bonded storage and frost-proof storage.

For tariffs covering various classes of storage and all services and facilities, apply to the Nova Scotia Public Cold Storage Terminals, Ltd. at Halifax.

#### (10) Connections to Air Port

The Halifax Air Port which is entirely modern and well equipped is located about three (3) miles from the Passenger Landing Quay at the Ocean Terminals. Direct Motor car connections over paved streets are available between the Quay and the Air Port.

#### (11) Immigration Quarters and Facilities:

The Immigration facilities are located on the upper floor of Transit Shed No. 21 and in the Immigration Building situated on the east side of the Marginal Road, and about 80 feet westerly from and parallel to Transit Shed No. 21. This building is one storey with rick walls, 22 feet high at the eaves and with pitched roof. The foundations are concrete walls and pedestals, resting on timber piles. The floor is concrete covered partly with Mastic and partly Hardwood. The roof, which is of laminated timber is supported by steel trusses and purlins.



This building is connected with the facilities on the upper floor of Transit Shed No. 21, by means of an elevated covered passageway. The portion bridging the tracks is of steel construction. The balance is timber framed.

The method of handling Immigrants is as follows:

When the Immigrants leave the ship they are received in the Examination Quarters in Shed No. 21, where their eligibility to enter the country is established. Those not qualified are held in the Detention Quarters, and those admitted are grouped according to their destinations and the necessary transportation documents arranged. They are then conveyed through the passageway to the Immigration Building where food is available at the canteen and large dining-room and where baggage is checked. Trains are made up and immigrants entrain from the platform of this Building.

The Immigration Quarters in Transit Shed No. 21 contain sleeping and hospital accommodation for immigrants.

#### (12) Coal Bunkering:

The Coal Dock at Berth No. 26, operated by the Dominion Steel & Coal Corp'n, Limited, is equipped with two Mead-Morrison Coaling Towers. When both the Towers are in operation a 7,000 ton Collier can be discharged in about 24 working hours.

As regards bunkering steamers, each Tower has a maximum capacity of 300 gross tons per hour.

In addition to the Coaling Towers, there are three Coaling Barges as follows:

No. 1 - Capacity 900 gross tons equipped with elevator buckets with a maximum bunkering capacity of 150 gross tons per hour.

No. 2 - Capacity 900 gross tons equipped with Brown Hoist and Grab Bucket with maximum bunkering capacity of 100 tons per hour.



No. 3 - Capacity 300 gross tons, equipped with McMyler Crane and Grab Bucket with a maximum bunkering capacity of 75 gross tons per hour.

On the space at present occupied at Berth No. 26, an average stock of about 10,000 gross tons is carried and if necessary a stock to about 18,000 gross tons can be carried. The prices for bunker coal are as follows:

F.O.B. Pier - \$7.75 per ton.  
For delivery by barge from Pier to ship's side - \$8.25 per ton.

In addition to the above there is a coaling plant at Richmond Terminals with a capacity of 100 tons per hour.

#### (13) Oil Bunkering:

The Imperial Oil Company at Imperoyal, on the Dartmouth side of the Harbour opposite the Ocean Terminals, has the largest oil refinery in Canada, which covers 530 acres of land. Oil tankers discharge crude oil at the Company's piers directly to the Refinery. At these Piers, which have a depth of water of about 37 feet, fuel oil can be supplied to ships at the rate of 5,000 barrels an hour. Plant Storage - 10,500,000 gallons.

The Oil Company also has an oil boat available for bunkering ships in any part of the Harbour. The prices for bunker oil are as follows:

Bunker "C" - \$1.10 per barrel  
" "B" - \$1.20 per barrel

These prices are F.O.B. Imperial Oil Company's pipe line at Imperoyal. If lighter service is provided an extra charge of .05¢ per barrel is charged.

#### (14) Water:

Each Berth at the Ocean Terminals is equipped with two ship's supply outlets, each outlet fitted with a Siamese connection to take two  $2\frac{1}{2}$ -inch hose. Water can be supplied at each outlet at the rate of 500 gallons per minute, or 150 tons per hour.

At Pier No. 2 at Deep Water Terminals, there are two outlets at each Berth, fitted for  $2\frac{1}{2}$  diameter hose.

In all cases outlets for watering ships are equipped with individual meters.

Ships can obtain water while at anchorage or otherwise, from two privately owned and operated water boats.



The charge for water through dockside connections with the Commissioners' water mains is .25¢ per 1000 gallons plus labour.

Where steamers are at private wharves without water connections they can be supplied by water boat at .30¢ per 100 gallons or .60¢ per ton.

All water supplied comes directly from the City of Halifax Water System, which is unrivalled for its purity.

(15) Ballast:

Salt Water Ballast can be obtained in unlimited quantities free of charge. If desired clean stone or gravel ballast may be obtained at moderate prices depending upon quantity required and other conditions.

(16) Electric Current

110 volts, 60 cyc. 3 ph. alter. current, is available at all Transit Sheds for lighting purposes. Lighting and power charges are .05¢ per K.W. Hour.

(17) Telephone Service

Pier side telephones are available at Berths Nos. 27 and 28 at present.

(18) Weighing

The following weighing equipment is available:

Ocean Terminals

Transit Shed #20	-	2,	3-ton stationary platform dial scales
"	"	#21	2, " "
"	"	#22	2, " "
"	"	#23	1, " "
"	"	#24	1, 4 "
"	"	#25	1, " "
"	"	#27	2, 3 "
"	"	#28	1, 5 "

Also 10 (C.N.R.) 1-ton Portable Beam Scales

Deep Water Terminals:

Pier No. 2

3 (C.N.R.) 1-ton Portable Platform Beam Scales  
1 Portable 600-lb. Platform Beam Scale

Pier No. 3

2 6-ton Stationary Platform Beam Scales  
3 (C.N.R.) 1-ton Portable Platform Beam Scales



Pier No. 4

1, 6-ton Stationary Platform Beam Scale

No charge is assessed for the use of Halifax Harbour Commissioners' Platform or Moveable Scales when handling cargo on Harbour Commissioners' Piers.

(19) Floating Crane: "Lord Kitchener" - has a maximum capacity of 100 tons and is available for heavy lifting service at any point in the Port.

(20) Lighterage:

Owing to the circumstances that the Terminal Sub-Divisions of the Port are served by a unified Railway System, there has been very little call for Lighterage service at the Port of Halifax.

Privately owned and operated Lighters and Barges, however, are available when required and charges are open to negotiation with the parties owning and operating.

(21) Anchorage:

The Harbour of Halifax, with its 10 square miles of area, affords practically unlimited facilities for anchorage. The formation of the Harbour bottom provides good holding ground.

Ships are permitted to anchor anywhere in the Harbour, except in the fairway, in front of the ferry slips and at two localities where there are submarine cables. The latter are plainly marked.

There are no charges for anchorage.

(22) Cartage and Drayage:

This service is performed by several Cartage Companies operating at the Port of Halifax. Either



horse-drawn or self-propelled vehicles are available.

The average charges range from 60¢ to \$1.30 per ton of 2,000 lbs. depending upon the character and volume of the traffic.

A wide range of different types of conveyances is available up to and including heavy weights of 6 tons or 12,000 lbs.

### (23) Graving Dock, Ship-Building & Repair Plants:

The Halifax Shipyards Limited (Halifax Plant) which is located along the Harbour front extending southwards from Richmond Terminals for a distance of about 3300' to the north boundary of H. M. Dockyards, have important and well-known Dry-docking, Ship-building and Repair facilities as follows:

#### (a) Graving Dock

Dimensions: - Overall length 569 feet, - which can be increased to 586 feet by moving the gate to an outside position. Entrance width 89' 3", inside width 102' 6", Draught of water at high tide, over keel blocks, 27' 0", over sill 30' 0". This dock is equipped with dock side cranes and all the usual facilities for repair work.

#### Schedule of Graving Dock Charges

Gross Regd. Tons	1st day of 24 Hours	Subsequent days of 24 Hours or fractions thereof, each.
Under - 1000	\$ 300.00	\$ 120.00
1000 - 1199	340.00	142.50
1200 - 1399	365.00	142.50
1400 - 1599	390.00	142.50
1600 - 1799	415.00	165.00
1800 - 1999	450.00	165.00
2000 - 2249	475.00	165.00
2250 - 2499	500.00	187.50
2500 - 2749	525.00	187.50
2750 - 2999	550.00	187.50
3000 - 3499	575.00	225.00
3500 - 3999	600.00	225.00
4000 - 4499	625.00	225.00
4500 - 4999	650.00	262.50
5000 - 5499	700.00	262.50
5500 - 5999	750.00	300.00
6000 - 6749	875.00	300.00
6750 - 7499	950.00	337.50
7500 - 8249	1,025.00	337.50
8250 - 8999	1,100.00	375.00
9000 - 9999	1,200.00	412.50
10000 - 10999	1,300.00	450.00
11000 - 11999	1,400.00	525.00



Gross Regd. Tons	1st day of 24 Hours	Subsequent days of 24 Hours or fractions thereof, each	-33
12000 - 12999	\$ 1,500.00	\$ 600.00	
13000 - 13999	1,600.00	675.00	
14000 - 14999	1,700.00	750.00	
15000 -	1,800.00	825.00	

(b) Ship-building Berths:

Four ship-building berths each 615' long by 60' wide, equipped with revolving derricks.

(c) Buildings:

Machine Shop - Fire-proof, reinforced concrete building, one storey about 36 feet high, 280 feet long, 100 feet wide, with electric travelling overhead crane and all necessary machinery for all kinds of machinery repairs.

Plate Shop - A fire-proof brick building 600 feet long, 75 feet wide, 60 feet high, with two electric travelling overhead cranes, and all necessary machinery for the fabrication of steel for steel construction and ship repair. Above this building is located the mould loft, which is 500 feet long and 75 feet wide.

Power - Electric current for power purposes is supplied by the Nova Scotia Light and Power Company.

Pump House - Brick construction 40 feet by 24 feet in which is installed pumps for pumping out the dry-dock.

Offices and Stores - Fire-proof and reinforced concrete and brick, 265 feet by 50 feet in width, 60 feet of which is four stories high and the remainder three stories.

(d) Fire Protection.

Supplied by an 8-inch sprinkler system installed throughout all the buildings.

(e) Travelling Cranes, Etc. and dinky locomotive for the movement of material.

(f) Motor Vessel "Erie" - Self propelling, with a 75-horse power Fairbanks-Morse engine, with electric welding unit, compressed air unit and lightning rods.

(g) Marine Railway

On the Dartmouth side of the Harbour this Company have a Marine Railway and facilities for repairs of schooners and tug boats. At this plant there are four railways and six cradles available. The cradles vary in length from 80' to 275' in depth forward from 13' to 17' and in depth aft from 14' to 18' all over keel block with water level. This sub-division of the plant has a Machine shop and Plate Shop with the necessary



machinery and tools for repairs and a travelling crane of 10-ton capacity. The charges are 25¢ per gross ton for the first twenty-four hours and 15¢ per gross ton for each day following. Lifting capacity up to 2500 tons.

#### (24) Salvage Equipment

The S. S. "Reindeer" a composite built vessel of 534 tons, length 180', beam 32' moulded depth 16', owned by The Halifax Shipyards Limited, is available for salvage work. This ship was specially constructed for this purpose and is completely equipped with pumps, - oil, steam and electrically driven, - compressors, diving outfits, compressed air tools, complete machine shop, wireless equipment and all other devices necessary in salvage work.

#### (25) First Aid Equipment:

First Aid equipment is maintained and carried at all Harbour Police Offices under the control of the Halifax Harbour Commissioners.

Privately owned Piers are also equipped in accordance with the regulations which make same compulsory.

aid. Harbour Commissioners' Police are trained in first

#### (26) Pilotage:

The limits of the pilotage district of Halifax is inside a line drawn from Devil's Island to Chebucto Head between that and the automatic buoy off Portuguese Shoal.

There are two pilot boats and 23 pilots. A pilot boat with a number of pilots is always stationed at the mouth of the Harbour. This boat is equipped with a wireless telephone and receives advice of approaching ships, through the signal station at the Citadel. Pilots are placed on and taken off ships as required.

#### Pilotage Dues:

Pilotage dues shall be paid as follows by:

- (a) Ships propelled by sails;
- (b) Ships propelled by steam, gas, fluid, naphtha, or electric motors;
- (c) Ships in tow, other than scows.



	<u>Inwards</u>	<u>Outwards</u>
<b>Ships of not more than 200 tons</b>	\$ 9.60	\$ 9.60
" over 200 tons and up to 300 tons	13.20	13.20
" " 300 " " 400 "	16.80	16.80
" " 400 " " 500 "	19.20	19.20
" " 500 " " 600 "	21.60	21.60

Ships over 600 tons, \$21.60 inwards and outwards and sixty (60) cents for every 100 tons or fractional part thereof over 600 tons inwards and outwards.

Provided, however, that no ship registered in Canada which is engaged exclusively in fishing and is propelled wholly or in part by steam or other mechanical power, or which is propelled wholly by sail when of not more than two hundred and fifty tons, registered tonnage, shall not be required to pay the above pilotage dues unless a pilot be employed.

Notwithstanding anything contained in Section 457 of the Canada Shipping Act, it is further provided that in the case of ships registered in Canada, propelled, wholly or in part by steam, other than the class exempted as aforesaid, which are spoken by a pilot and his services are not accepted, pilotage dues shall be paid as follows:

(1) Of any tonnage employed in trading from port to port in the Province of Nova Scotia, exempt from the payment of pilotage dues.

(2) Of 1,000 tons and under when employed in trading between any one or more of the Provinces of Quebec, New Brunswick, Nova Scotia, or Prince Edward Island, or any other or others of them, exempt from the payment of pilotage dues; over 1,000 tons one-half of the above rate.

(3) Of 1,000 tons and under when employed in voyages between any port or ports in the said Provinces or any of them and the port of New York, or any port in the United States of America on the Atlantic north of New York exempt from the payment of pilotage dues; over 1,000 tons one-half of the above rates.

(4) Of 1,000 tons and under when employed in voyages between any port in any of the said Provinces or



and port in Newfoundland, exempt from the payment of pilotage dues; over 1,000 tons one-half of the above rates.

### Detention:

Ships when under detention at quarantine in excess of two hours shall pay in addition to the rates above mentioned, \$3.00 for the next two hours or any part thereof, and \$1.00 for every additional two hours or any part thereof; and if the detention exceeds four hours a charge for movage shall also be paid at the rate hereinafter provided. Time spent waiting for quarantine to open shall not be included when computing charges under this section.

Detention of pilots ordered to vessels which are prevented from proceeding to sea, from any cause other than adverse weather conditions, will be charged at the rate of \$3.00 for the first three hours and \$1.00 for every additional two hours or part thereof.

### Movage:

Ships under 1,000 tons shall not be required to pay movage dues, but if a pilot is employed, the rate shall be the same as for ships of 1,000 tons.

Ships of 1,000 tons and over shall pay movage dues as follows:

All ships of 1,000 tons and under 2,000 tons -	\$ 5.00
" " " and over 2,000 tons	\$10.00

To Bedford Basin, Lawler's Island, the North West Arm and Eastern Passage:

All ships of 1,000 tons and under 2,000 tons -	\$10.00
" " " and over 2,000 tons	\$20.00

### Compass Adjusting and Trial Trips

The charges for the services of a pilot shall be \$10.00 while compasses are being adjusted; \$15.00 for trial trips; and \$20.00 for trial trips if compasses are being adjusted at the same time, in addition to a charge for movage. If the compass adjusting or trial trips be carried out beyond the pilotage limits and extend over six hours, \$25.00 and an



extra \$10.00 for every additional six hours, or part thereof, in addition to the regular pilotage dues, outwards and inwards.

(27) Quarantine:

The Quarantine Station at Halifax is situated on Lawlor's Island and is operated by the Quarantine Service of Canada, under the control and administration of the Department of Pensions and National Health. It is in charge of a Medical Quarantine Officer.

Every vessel, except coastwise vessels and H. M. Ships of War and Transports shall be inspected by the Quarantine Officer at an area between McNab's and George's Islands, and shall not be allowed to make Customs entry until given a clear bill of health.

Masters of Passenger Ships shall notify the Quarantine Officer by wireless at least twelve hours previous to arrival, of condition of health of all on board. Inspection to be made as soon as possible after arrival.

In case of a vessel with infectious disease on board arriving after sunset (not earlier than 6 p.m.) she shall not be given clearance until after inspection by daylight.

Quarantine inspections are free of charge. All Hospital costs are charged to the vessel. This does not apply to sick members of crew, such cost being covered under the Canada Shipping Act.

Pilots are responsible to see that every Ships' Master has a copy of "Quarantine Regulations". Penalty not exceeding \$50.00.

Customs Officers must not allow entry of a vessel without quarantine clearance. Penalty not exceeding \$400.

Ships' Masters are liable to a penalty not exceeding \$400.00 for any contravention of Quarantine Regulations.



tions.

Ships' Medical Officers giving false answers to questions in Quarantine Form, liable to penalty not exceeding \$200.00.

Any person leaving vessels without permission of the Quarantine Officer, liable to penalty not exceeding \$20.00.

(28) Towage:

The charge for docking is \$30.00 per tug; and \$45.00 per tug night and Sundays. The boats are owned and operated by a private Company. It is not compulsory to obtain the assistance of tugs for berthing.

(29) Running Lines:

There is no Port charge in connection with handling Ships' lines. This is a matter between the Steamship Companies, their Agents and the Stevedoring Companies. Some of the Steamship Companies use their own Shore Crew and others pay Stevedores a nominal amount to perform this service.

Rope Springs and wire pennants are attached to the Mooring Posts and Bollards on the Halifax Harbour Commissioners' Landing Quay and Piers and are available for the use of the Steamship Companies without charge.

(30) Launch Hire:

Launches and boats can be obtained from several private Piers and Boathouses.

Charges for the same vary with the size of equipment and purpose for which used.

(31) Gear Hire:

Gear for handling cargo is available from Stevedoring Companies and Steamship Agents. Halifax Harbour Commissioners provide cargo and passenger gangways free of charge.



Cargo trucks for handling cargo on Halifax Harbour Commissioners' Properties are provided by the Harbour Commissioners.

The charge for the use of the same is 25¢ per crew per day.

(32) Harbour Dues:

There are no Harbour Dues at the Port of Halifax.

For charges for the use of the Piers, see Items Nos. 33 and 34.

(33) Harbour Master's Dues:

Harbour Master's Dues are assessed under the By-Laws of the Halifax Harbour Commissioners as follows:

(By-Law No. 91)

For every ship:

of	50 tons register, or under .....	\$ 0.50
of over	50 tons " and not over 100 tons.....	1.00
"	100 " "	1.50
"	200 " "	2.00
"	300 " "	2.50
"	400 " "	3.00
"	500 " "	4.00
"	700 " "	5.00
"	1,000 " .....	7.00

These fees, however, are payable in the Port of Halifax for a ship twice only in each calendar year, no matter how many times she may arrive at or depart from the Port in that year, and are payable by the master of the ship to the Harbour Master on her first and second entries into the Port in any calendar year and officers of Customs shall not grant clearance to any ship until the Master thereof exhibits to him the Harbour Master's receipt for the payment of the required fees, as above specified.



(34) Port Warden's Fees:

There are no regular charges for Port Warden except for special services required.

The following charges are assessed for special services:

Inspection of Cattle	\$8.00
Inspection of Hatches	10.00
Inspection of Grain	20.00

Other fees arranged according to nature of service rendered.

(35) Wharfage (Side and Top):

Side wharfage is assessed under Dockage for the use of Harbour Commissioners' Properties. The charges are as follows:

(By-Law No. 90)

(1) Dockage rates as hereunder set forth shall be paid on the gross registered tonnage of each vessel.

(2) Vessels making fast to a wharf or to a vessel at a wharf shall pay a minimum of one day's dockage, provided, however, that if such making fast is only for the purpose of warping from one wharf to another and does not extend beyond a period of one hour, no dockage shall be charged.

(3) Every vessel will be considered docked when her bow and stern lines are fastened to Mooring Posts.

(4) Every vessel will be considered sailed when her bow and stern lines have been unfastened from Mooring Posts.



(5) Except as hereinafter provided, every vessel lying at an outside berth shall pay full dockage charges.

(6) A reduction of 50 per cent on dockage rates will be made in the case of ocean steamers calling at Halifax, N. S., and occupying berth space for twelve (12) hours or less.

(7) Time at dock will be computed from time of docking to time of sailing as hereinbefore defined. Twenty-four (24) hours will constitute one day.

(8) The minimum charge for dockage will be twenty-five (25) cents.

(9) Dockage schedule:-

Scale A: - Applicable to ocean-going steam vessels:

Scale B: - Applicable to sailing vessels, also small coastwise steam vessels not exceeding 500 tons gross register.

Rates per Day, Per Gross Registered Tonnage of Vessel		Scale A	Scale B
Vessels 30 tons or under		\$ 0.75	\$ 0.25
" over 30 tons and not over 50 tons	"	1.00	0.25
" 50 "	" 60 "	1.00	0.30
" 60 "	" 80 "	1.50	0.30
" 80 "	" 100 "	2.00	0.30
" 100 "	" 150 "	2.50	0.50
" 150 "	" 200 "	3.00	1.00
" 200 "	" 250 "	3.50	1.00
" 250 "	" 300 "	4.00	1.50
" 300 "	" 350 "	4.50	1.50
" 350 "	" 400 "	5.00	2.00
" 400 "	" 450 "	5.50	2.50
" 450 "	" 500 "	6.00	3.00
" 500 "	" 600 "	7.00	3.50
" 600 "	" 700 "	8.00	4.00
" 700 "	" 800 "	8.50	4.50



Rates per day, etc. (Con't)

Scale A	Scale B
------------	------------

Vessels over 800 tons and not over 900 tons	\$9.00	\$5.00
" " 900 " " " 1000 "	9.50	5.50
" " 1000 " " " 1200 "	10.00	6.00
" " 1200 " " " 1400 "	11.00	6.50
" " 1400 " " " 1600 "	12.00	7.00

For each additional 100 tons or fraction thereof over 1,600 tons

0.50	0.50
------	------

Top wharfage charges are assessed on all cargo moving over Halifax Harbour Commissioners' Piers. With some exceptions for specific classes of traffic, the following charges are assessed:

(By-Law No. 92)

The following top wharfage rates shall be levied on all goods embarked into or discharged from vessels lying at the Harbour Commissioners' docks or wharves:

(For the purpose of this By-Law a ton shall be calculated as being two thousand (2,000) pounds weight or forty (40) cubic feet measurement according to the manner in which the articles are described on the ship's manifest.)

1. (a) All goods landed on or embarked from the Halifax Harbour Commissioners' wharves, except as provided for in paragraph (b) below -(One full top wharfage rate.)

(b) All goods discharged from vessel, sailing from point beyond Harbour, where such goods pass over the Commissioners' wharves, and are discharged into the water or lighters, scows or other vessels for delivery at point beyond Harbour; and

All goods loaded into vessels for points beyond Harbour where such goods pass over the Commissioners' wharves and are embarked from the water or lighters, scows or other vessels from point beyond Harbour, - (Two full top wharfage rates;



that is, one landing rate and one ship-  
ping rate.)

(c) All goods discharged from or embarked  
by vessels and discharged into or embarked  
from the water or lighters, scows or other  
vessels, where such goods DO NOT PASS over  
the Commissioners' wharves. -  
(One full top wharfage rate.)

(d) All goods discharged from vessel, where  
such goods PASS over the Commissioners' wharves  
and are discharged into the water or lighters,  
scows or other vessels for delivery at point  
within Harbour.  
(One full top wharfage rate.)

All goods embarked by vessel where such  
goods PASS over the Commissioners' wharves  
and are embarked from the water or lighters,  
scows or other vessels from point within Har-  
bour. - (One full top wharfage rate.)

2. The minimum charge for any single shipment  
shall be ten (10) cents.

3. The charge on all goods, wares and merchandise  
not otherwise specified shall be twenty-five (25) cents  
per ton for import and twenty (20) cents per ton for ex-  
port as carried weight or measurement.

#### (36) Customs:

The district of Halifax includes Dartmouth and Bedford  
Basin and governs all traffic moving in and out of the Harbour.

A Collector of Customs is in charge at the Port of  
Halifax. Customs Preventative Services are equipped with  
several small cutters.

The Customs House is open for entry and clearance of  
vessels from 9 A.M. to 5 P.M. After hours, that is between  
5 P.M. and 9 A.M. the Collector of Customs will, when ad-  
vised by Steamship Agents, detail Customs Officers to attend  
to the entry and clearance of all shipping without charge,  
except on Sundays and holidays, when the charge is 75 cents  
per hour for each Customs Officer employed.

#### (37) Consuls:

The following is a list of the Consuls at the



Port of Halifax:

Argentine	-	Col. A. N. Jones
Belgium	-	" " " "
Latvian	-	" " " "
Cuban	-	Fernando Pena Poldo
French	-	A. S. Lanfranchi
Haiti	-	F. W. Dickie
Italian	-	W. B. Spencer
Liberia	-	P. E. Hechler
Netherlands	-	F. K. Warren
Norway	-	H. I. Mathers
Denmark	-	" " "
Panama	-	W. A. Black
San Domingo	-	" " "
Portugal	-	H. Oxley
Sweden	-	J. M. Davison
Spain	-	H. W. Jones
U. S. A.	-	Frank C. Lee
Uruguay	-	John Neville
Venezuela	-	H. R. Silver

(38) Watchmen:

Watchmen can be obtained through regular Employment Agencies.

Charges run from 40¢ to 45¢ per hour.

(39) Ship's Dunnage:

Halifax Harbour Commissioners supply wooden dunnage to ships at cost at several Piers, where a supply is kept.

Wooden Dunnage is always available from lumber yards in the Port.

Prices range from \$17.00 to \$30.00 per 1,000'.

Other types of dunnage are available from firms specializing in ship's supplies.



(40) Stevedores' Charges:

Cargo is handled over Halifax Harbour Commissioners' Piers by Stevedoring Companies.

The charges for the same may be obtained on application.

(41) Labour:

Plenty of labour is available at the Port of Halifax throughout the year. Men can be obtained on application through Stevedore Companies, Employment Bureau or Longshoremen's Union. Wages run from 40¢ to 75¢ per hour, depending on the class of work.

(42) Surveyors' Fees:

Surveyors representing Lloyds, London Salvage Association and Port Warden are available.

For Lloyds and the London Salvage Association the fees are not fixed but vary as to amount and character of work.

For Port Warden's fees see Section (34) hereof.

(43) Agency Fees:

Agency fees are determined by private arrangement.

The average fee for sailing vessels is about \$25.00.

(44) Ships' Brokers Fees:

For ship's charter, the fees range from 1% to 5% of the gross freight revenues.

(45) Custom House Brokers' Fees:

The charge for entering or clearing a vessel at



the Custom House is \$5.00; for noting vessel's protest, \$2.50; for extending vessel's protest, \$15.00.

(46) Freight Brokers' Fees:

The customary charge for making out Bills-of-Lading is \$1.00, but is often absorbed by the Agent.

(47) Forwarding Agent's Fees:

These fees are arranged by private negotiation.

(48) Interpreters' Fees:

The customary charge for interpreters' services is \$2.50 per hour; translating 75¢ per 100 words.

(49) Handling charges - General

All Railways serving the Port of Halifax load and unload import and export freight between cars and Piers equipped with Railway tracks. The cost of the same is included in the line-haul rates received by the Railway Companies.

Local traffic is delivered to Piers either by being switched in Railway cars or carted.

Handling between Ship and Pier is performed by Steamship Companies, their agents or Stevedoring Companies. The charges for this service generally assumed by the vessel

Halifax Harbour Commissioners operate temperature-regulated warehouse in the upper section of Pier No. 2 at Deep Water Terminals where the matter of elevating and handling from storage depends on the character of traffic handled and as to whether performed by Halifax Harbour Commissioners or by shippers.

(50) Terminal Switching charges:

Charges for terminal switching provided by Can-



adian National Tariff No. S-1, C.R. C. No. E-875.

Examples of local switching charges are as follows:

From Ocean Terminals:

To Deep Water Yards:  $3\frac{1}{2}\text{¢}$  per 100 lbs.  
Minimum \$9 per car

" Ocean Terminals:  $1\frac{1}{2}\text{¢}$  per 100 lbs.  
Minimum \$5 per car

" Richmond Yards:  $3\frac{1}{2}\text{¢}$  per 100 lbs.  
Minimum \$9 per car

" Rockingham Yards:  $2\frac{1}{2}\text{¢}$  per 100 lbs.  
Minimum \$7.50 per car

" Willow Park Yards:  $3\frac{1}{2}\text{¢}$  per 100 lbs.  
Minimum \$10 per car

Reconsigned switching rates are as follows:

From Ocean Terminal Yards:

To Deep Water Yards:  $2\frac{1}{2}\text{¢}$  per 100 lbs.  
Minimum \$7.50 per car

" Richmond Yards:  $2\frac{1}{2}\text{¢}$  per 100 lbs.  
Minimum \$7.50 per car

" Rockingham Yards:  $1\frac{1}{2}\text{¢}$  per 100 lbs.  
Minimum \$5 per car

" Willow Park Yards:  $\frac{1}{2}\text{¢}$  per 100 lbs.  
Minimum \$2.50 per car

(51) Absorption of Charges:

Top Wharfage charges assessed by the Halifax Harbour Commissioners for the use of Transit Sheds and Piers operated by them are absorbed by the rail carriers



on import and export traffic when the rail carriers receive a road haul on the traffic.

Switching charges to and from Piers and Classification Yards are also absorbed in the line-haul rate of the rail carriers.

Cartage charges to and from rail heads and privately owned Piers are generally absorbed by those operating the Piers.

#### (52) Steamship Sailings:

Regular sailings to and from the Port of Halifax and Continental Ports are maintained. In addition to this, there are regular sailings on the West Indies, St. Lawrence River, Newfoundland, South America, New Zealand, Australia, and Coastwise routes; also, the International Coastwise between New York, Boston and Halifax.

#### (53) Ships' Supplies:

Ships' supplies are available at several places specializing in Ships' fittings, supplies, etc. at current prices.

#### (54) Marine Insurance:

Marine Insurance rates are on a parity with other North Atlantic Ports.

Marine Surveyors with offices in Halifax are as follows:-

The London Salvage Association  
Lloyds  
The Port Warden.

The following Marine Underwriting Organizations are represented in Halifax:-

Capt. W. H. Hebb, representing

Boston Insurance Company.

Dale & Company, representing

Eagle Star & British Dominion Insurance Co. Ltd.  
Motor Union Assurance Co.



Thames & Mersey Co. Ltd.

Thompson Adams & Co., representing  
Home Insurance Co. of New York

Rainnie & Co. Ltd., representing  
National Union Fire Insurance Co.  
Union Insurance Society of Canton Ltd.  
Tokyo Marine & Fire Insurance Co.  
Aetna Insurance Co.  
Yorkshire Insurance Co.

Grant Oxley & Co., representing  
Phoenix Assurance Co. Ltd. of London

Maritime Agencies Ltd., representing  
Springfield Fire & Marine Insurance Co.  
British Traders Insurance Co.

Pickford & Black, representing  
Board of Underwriters of New York  
West of England Protection & Indemnity Assurance Ltd.

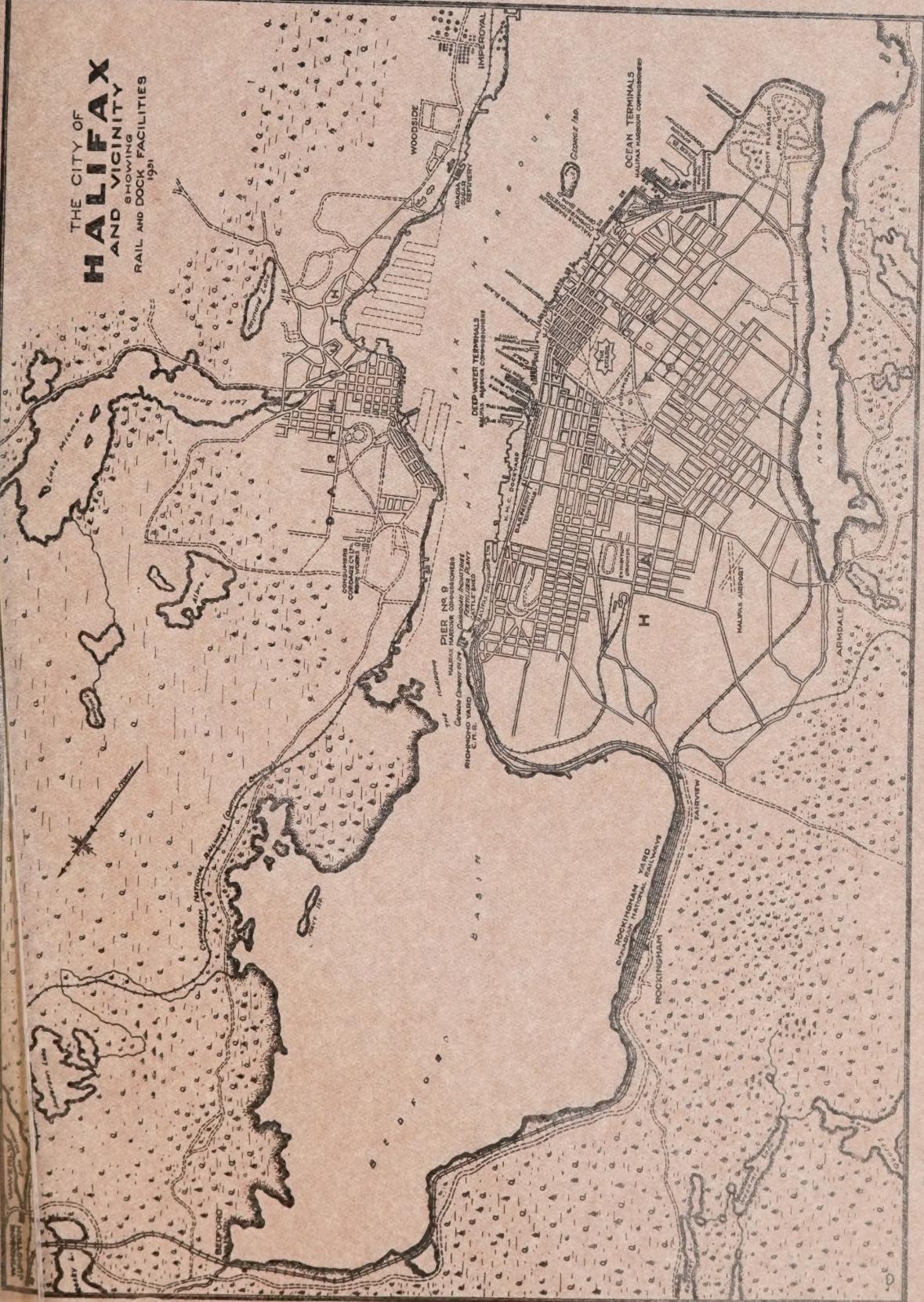
F. W. Dickie & Co. representing  
Harris Mirriam & Co.

John Strachan Co. Ltd. representing  
Old Colony Insurance Co.  
Western Assurance Co.  
Thames & Mersey Co. Ltd.

(55) Rail Rates to and From the Interior:

Rail rates to and from the Interior provide for a general application of the New York rates on export and import traffic. For reference see Canadian National Railway Tariffs Nos. 1-21, 1-25, 1-32, 1-35, 1-42, E-25, E-40, E-42, E-50; Dominion Atlantic Railway Tariffs Nos. CT-382, CT-388; CT-390, CT-395; Canadian Pacific Railway Tariffs Nos. E-1460, E-1440, E-1780, E-1790, E-1800, E-1820; Canadian Freight Association Tariffs Nos. 10-F and 11-H.





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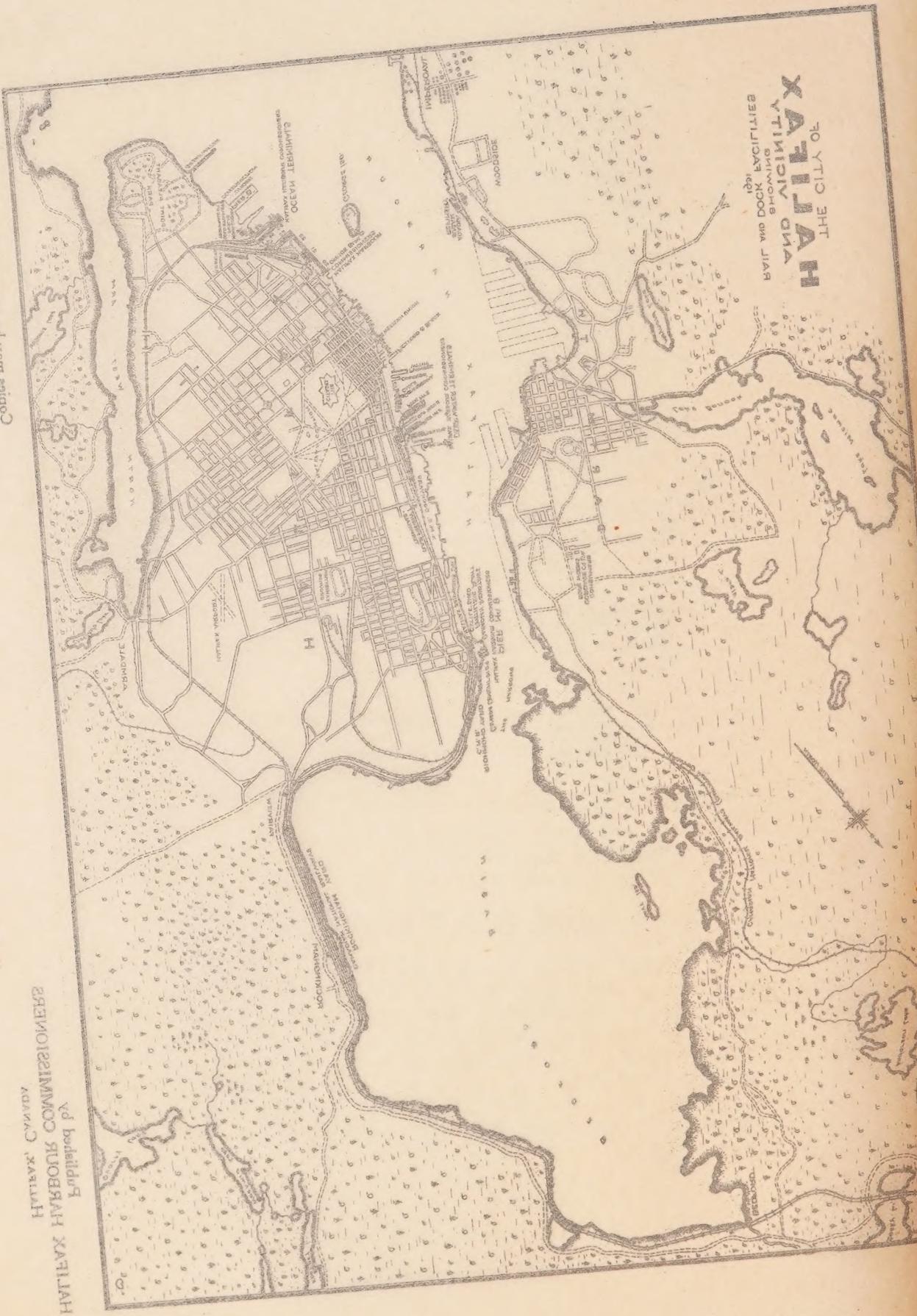
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